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U.S. Department
of Transportation

United States
Coast Guard



Merchant Marine Examination Questions

3

Navigation General

June
1992

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COMDTPUB P16721.23A



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COMMANDANT PUBLICATION P16721.23A

Subj: Merchant Marine Examination Navigation General Questions

1. PURPOSE. This publication makes the navigation general questions in the merchant marine examination question bank available to the public. The public has the opportunity to review and comment on the questions' clarity and accuracy. Other publications in this series contain the questions found in the remaining subject areas of the merchant marine examinations.
2. PROCEDURE. This publication is effective upon receipt. It supersedes COMDTPUB P16721.23 and COMDTPUB P16721.33, dated October 1989.
3. DISCUSSION.
 - a. The print size in this publication was changed to reduce the size of each volume, the number of volumes, and the cost to the public.
 - b. The questions in this publication reflect those in the data bank as of 31 July 1991. The Coast Guard will continue to develop new questions and use them in merchant marine examinations prior to releasing them to the public.
 - c. New questions and illustrations will be released through periodic supplements and the question books will be reprinted when the volume of new questions makes supplements impractical.

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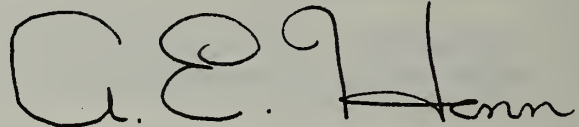
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3. d. Some questions require the use of illustrations. COMDTPUB P16721.6A, Merchant Marine Deck Examination Illustration Book, dated January 1992, contains all the deck illustrations referred to by the questions on general navigation.
4. ORDERING INFORMATION. Copies of this publication are available from the Government Printing Office at the following address:

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INSTRUCTIONS

1. Each numbered question contains a stem and four possible answers. The stem supplies the information and poses the question. There is only one answer that completely satisfies all the conditions set forth in the stem. The answers to the questions are listed at the end of the book as Appendix A.
2. Question numbers increase from the beginning to the end of the book and do not always run consecutively. This allows for future insertion of new questions.
3. Some questions require the use of an illustration or diagram to answer the question. Such requirement is stated in the stem of the question. The Merchant Marine Deck Examination Illustration Book, COMDTPUB P16721.6A, contains the illustrations and diagrams.
4. A study bibliography is included as Appendix B.
5. Individuals who wish to comment on any question in this publication should send a WRITTEN comment, citing this publication and the number of each question commented on to:

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Review of all written comments is done by at least two licensed merchant marine officers. Corrections are made to questions as necessary. Additionally, adjustments to modules in use are made as required.

6. These Merchant Marine Examination Question Books are also available for sale in the electronic format on either 5 1/4 or 3 1/2 inch disks. The disks may be ordered by telephone and charged to a national credit card by calling (202) 512-1530. They are also available by mail order from the Government Printing Office by writing to:

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00001. Unlighted, red and green, horizontally-banded buoys with the topmost band red _____.
A. are cylindrical in shape and called can buoys
B. are conical in shape and called nun buoys
C. may either be cylindrical or conical since the shape has no significance
D. are triangular in shape to indicate that it may not be possible to pass on either side of the buoy
00002. On an isomagnetic chart, the line of zero variation is the _____.
A. zero variation line
B. isogonic line
C. variation line
D. agonic line
00003. Blinking of a Loran-C signal indicates _____.
A. the signal is in proper sequence
B. there will be no increase or decrease in kHz
C. there is an error in the transmission of that signal
D. that it has the proper GRI
00004. Gyrocompass repeaters reproduce the indications of the master gyrocompass. They are _____.
A. accurate only in the Polar regions
B. accurate electronic servomechanisms
C. hand operated
D. accurate only if the vessel is underway
00005. A vessel is steaming in east longitude on January 25 and crosses the International Date Line on an eastbound course at 0900 zone time. What is the date and time at Greenwich when the vessel crosses the line?
A. 0900, 24 January
B. 2100, 24 January
C. 2100, 25 January
D. 0900, 26 January
00006. Wind velocity varies _____.
A. directly with the temperature of the air mass
B. directly with the pressure gradient
C. inversely with the barometric pressure
D. inversely with the absolute humidity
00007. The period at high or low tide during which there is no change in the height of the water is called the _____.
A. range of the tide
B. plane of the tide
C. stand of the tide
D. reversing of the tide
00008. When you are steering on a pair of range lights and find the upper light is above the lower light you should _____.
A. come left
B. come right
C. continue on the present course
D. wait until the lights are no longer in a vertical line

00009. When displayed under a single-span fixed bridge, red lights indicate _____.
- A. the channel boundaries
 - B. that vessels must stop
 - C. the bridge is about to open
 - D. that traffic is approaching from the other side
00010. The wind at Frying Pan shoals has been northwesterly at an average velocity of 22 knots. The predicted set and drift of the rotary current are 125° at 0.6 knot. What current should you expect?
- A. 119° at 0.9 knot
 - B. 172° at 1.1 knots
 - C. 225° at 0.6 knot
 - D. 340° at 0.4 knot
00011. A buoy having red and green horizontal bands would have a light characteristic of _____.
- A. interrupted quick-flashing
 - B. composite group-flashing
 - C. Morse (A)
 - D. quick flashing
00012. Lines on a chart which connect points of equal magnetic variation are called _____.
- A. magnetic latitudes
 - B. magnetic declinations
 - C. dip
 - D. isogonic lines
00013. Most modern Loran-C receivers, when not tracking properly, have a(n) _____.
- A. bell alarm to warn the user
 - B. lighted alarm signal to warn the user
 - C. alternate signal keying system
 - D. view finder for each station
00014. You have replaced the chart paper in the course recorder. Which of the following is NOT required to ensure that a correct trace is recorded?
- A. Test the electrical gain to the thermograph pens
 - B. Set the zone pen on the correct quadrant
 - C. Line the course pen up on the exact heading of the ship
 - D. Adjust the chart paper to indicate the correct time
00016. The direction of the surface wind is _____.
- A. directly from high pressure toward low pressure
 - B. directly from low pressure toward high pressure
 - C. from high pressure toward low pressure deflected by the earth's rotation
 - D. from low pressure toward high pressure deflected by the earth's rotation
00017. "Stand" of the tide is that time when _____.
- A. the vertical rise or fall of the tide has stopped
 - B. slack water occurs
 - C. tidal current is at a maximum
 - D. the actual depth of the water equals the charted depth

00018. If possible, a vessel's position should be plotted by bearings of _____.
- A. buoys close at hand
 - B. fixed known objects on shore
 - C. buoys at a distance
 - D. Any of the above
00019. You are approaching a swing bridge at night. You will know that the bridge is open for river traffic when _____.
- A. the fixed, green light starts to flash
 - B. the amber light changes to green
 - C. the red light is extinguished
 - D. the red light changes to green
00020. You are underway on course 050° T and your maximum speed is 12 knots. The eye of a hurricane bears 120° T, 110 miles from your position. The hurricane is moving towards 285° T at 25 knots. If you maneuver at 12 knots to avoid the hurricane, what could be the maximum CPA?
- A. 77 miles
 - B. 82 miles
 - C. 87 miles
 - D. 93 miles
00021. Which buoy is lettered?
- A. Green can buoy
 - B. Preferred channel buoy
 - C. Red lighted buoy
 - D. Green gong buoy
00022. A chart showing the coast of Mexico is produced by, and could be ordered from, the United States _____.
- A. Defense Mapping Agency Hydrographic Center
 - B. Coast Guard
 - C. Naval Observatory
 - D. National Ocean Service
00023. If Loran-C signals become unsynchronized, the receiver operator is warned because _____.
- A. signals begin to blink
 - B. signals begin to shift
 - C. stations discontinue transmission
 - D. stations transmit grass
00024. When the gyropilot is used for steering, what control is adjusted to compensate for varying sea conditions?
- A. Rudder control
 - B. Sea control
 - C. Lost motion adjustment
 - D. Weather adjustment

00025. You are in LONG 144° E. The date is 6 February, and the zone time is 0800. The Greenwich date and time are _____.
- A. 2200, 5 February
 - B. 2300, 5 February
 - C. 1700, 6 February
 - D. 1800, 6 February
00026. Wind direction may be determined by observing all of the following EXCEPT _____.
- A. low clouds
 - B. waves
 - C. whitecaps
 - D. swells
00027. Spring tides are tides that _____.
- A. have lows lower than normal and highs higher than normal
 - B. have lows higher than normal and highs lower than normal
 - C. are unpredictable
 - D. occur in the spring of the year
00028. When using a buoy as an aid to navigation which of the following should be considered?
- A. The buoy should be considered to always be in the charted location.
 - B. If the light is flashing, the buoy should be considered to be in the charted location.
 - C. The buoy may not be in the charted position.
 - D. The buoy should be considered to be in the charted position if it has been freshly painted.
00029. You are approaching a multiple-span bridge at night. The main navigational channel span will be indicated by _____.
- A. a red light on the bridge pier on each side of the channel
 - B. a steady blue light in the center of the span
 - C. 3 white lights in a vertical line in the center of the span
 - D. a flashing green light in the center of the span
00030. When taking an amplitude, the Sun's center should be observed on the visible horizon when _____.
- A. in high latitudes
 - B. the Sun is near or at a solstice
 - C. the declination is of a different name from the latitude
 - D. the Sun's declination is at or near 0°
00031. When approaching a preferred-channel buoy, the best channel is NOT indicated by the _____.
- A. light characteristic
 - B. color of the uppermost band
 - C. shape of an unlighted buoy
 - D. color of the light
00032. The datum used for soundings on charts of the Atlantic Coast of the United States is _____.
- A. mean low water
 - B. mean lower low water
 - C. mean high water springs
 - D. mean high water

00033. Most modern Loran-C receivers automatically detect station blink which _____.
- A. indicates the station is transmitting normally
 - B. triggers alarm indicators to warn the operator of a malfunction
 - C. automatically shuts down the receiver
 - D. enables the receiver to shift automatically to an alternate station
00034. The normal variation between the actual depth of water and the indicated depth on an electronic depth sounder due to water conditions is on the side of safety. This would NOT be true in a case when the water _____.
- A. has high salinity
 - B. is unusually warm
 - C. is fresh
 - D. is extremely cold
00035. You are on a vessel at 0400 ZT on 3 July, and the ZD for your position is -8. What is the GMT?
- A. 1200, 3 July
 - B. 2000, 3 July
 - C. 1200, 2 July
 - D. 2000, 2 July
00036. A strong, often violent, northerly wind occurring on the Pacific coast of Mexico, particularly during the colder months, is a _____.
- A. Papagayo
 - B. fall wind
 - C. foehn
 - D. williwaw
00037. What does the term "tide" refer to?
- A. Horizontal movement of the water
 - B. Vertical movement of the water
 - C. Mixing tendency of the water
 - D. Salinity content of the water
00038. When navigating a vessel, you _____.
- A. can always rely on a buoy to be on station
 - B. can always rely on a buoy to show proper light characteristics
 - C. should assume a wreck buoy is directly over the wreck
 - D. should never rely on a floating aid to maintain its exact position
00039. Civil twilight begins at 1910 zone time on 20 July 1981. Your DR position at that time is LAT 22°16' N, LONG 150°06' W. Which statement concerning the planets available for evening sights is TRUE?
- A. Venus will have a westerly meridian angle.
 - B. Mars will set about one hour after the Sun sets.
 - C. Mars, Venus, Jupiter, and Saturn will be above the horizon.
 - D. Sights of Saturn, Jupiter, and Venus will yield a good three-line-of-position fix.

00040. The predicted time that the flood begins at the entrance to Delaware Bay is 1526. You are anchored off Chestnut St. in Philadelphia. If you get underway bound for sea at 1600 and turn for 8 knots, at what point will you lose the ebb current?
- A. Billingsport
 - B. Marcus Hook
 - C. Mile 63
 - D. Mile 52
00041. Mean high water is the reference plane used for _____.
- A. all vertical measurements
 - B. heights above water of land features such as lights
 - C. soundings on the East and West Coasts
 - D. water depths on the East Coast only
00042. The datum used for soundings on charts of the East Coast of the United States is _____.
- A. mean low water springs
 - B. mean low water
 - C. mean lower low water
 - D. half tide level
00043. A buoy with a composite group-flashing light indicates a(n) _____.
- A. anchorage area
 - B. fish net area
 - C. bifurcation
 - D. dredging area
00044. The speed of sound through ocean water is nearly always _____.
- A. faster than the speed of calibration for the fathometer
 - B. the same speed as the speed of calibration for the fathometer
 - C. slower than the speed of calibration for the fathometer
 - D. faster than the speed of calibration for the fathometer, unless the water is very warm
00045. The navigator aboard a ship at approximately 165° E longitude observes the Sun at ZT 14-25-04 on 21 September. What is the GMT and Greenwich date of the observation?
- A. 03-25-04, 21 September
 - B. 02-25-04, 21 September
 - C. 01-25-04, 21 September
 - D. 01-25-04, 20 September
00046. What wind reverses directions seasonally?
- A. Monsoon winds
 - B. Hooked trades
 - C. Jet stream
 - D. Secondary winds
00047. The range of tide is the _____.
- A. distance the tide moves out from the shore
 - B. duration of time between high and low tide
 - C. difference between the heights of high and low tide
 - D. maximum depth of the water at high tide

00048. When should a navigator rely on the position of floating aids to navigation?
- A. During calm weather only
 - B. During daylight only
 - C. Only when inside a harbor
 - D. Only when fixed aids are not available
00049. While steering a course of 150° T, you wish to observe a body for a latitude check. What would the azimuth have to be?
- A. 000° T
 - B. 090° T
 - C. 150° T
 - D. 240° T
00050. The difference between the heights of low and high tide is the _____.
- A. period
 - B. range
 - C. distance
 - D. depth
00051. In the U.S. Aids to Navigation System, red and green horizontally-banded buoys mark _____.
- A. channels for shallow draft vessels
 - B. general anchorage areas
 - C. fishing grounds
 - D. junctions or bifurcations
00052. The reference datum used in determining the heights of land features on most charts is _____.
- A. mean sea level
 - B. mean high water
 - C. mean low water
 - D. half-tide level
00053. Loran-C may be used for safe navigation in harbor areas due to _____.
- A. multipulse grouping
 - B. repeatability of readings
 - C. synchronization control
 - D. using secondary vs. slave stations
00054. The elapsed time of a fathometer signal (from sound generation to the return of the echo) is 1 second. What is the depth of the water at the point sounded?
- A. 400 feet
 - B. 400 fathoms
 - C. 800 feet
 - D. 800 fathoms
00055. Your longitude is $179^{\circ}59'$ W. The LMT at this longitude is 23h 56m on the 4th day of the month. Six minutes later, your position is $179^{\circ}59'$ E longitude. Your LMT and date are _____.
- A. 00h 02m on the 4th
 - B. 00h 02m on the 5th
 - C. 23h 50m on the 5th
 - D. 00h 02m on the 6th

00056. A strong, often violent, northerly wind occurring on the Pacific coast of Mexico, particularly during the colder months, is called _____.
A. Tehuantepecer
B. Papagayo
C. Norther
D. Pampero
00057. The height of tide is the _____.
A. depth of water at a specific time due to tidal effect
B. difference between the depth of the water and the area's tidal datum
C. difference between the depth of the water and the high water tidal level
D. difference between the depth of the water at high tide and the depth of the water at low tide
00058. In calculating a running fix position, what is the minimum number of fixed objects needed to take your lines of position from?
A. One
B. Two
C. Three
D. None
00059. For navigational purposes, each great circle on the Earth has a length of _____.
A. 3,600 miles
B. 5,400 miles
C. 12,500 miles
D. 21,600 miles
00060. The predicted time that the ebb begins at the entrance to Delaware Bay is 1526. You are anchored off Chestnut St. in Philadelphia. If you get underway bound for sea at 1630 and turn for 12 knots, at what point will you lose the flood current?
A. New Castle
B. Reedy Island
C. Mile 44
D. Ship John Shoal Lt.
00061. Red lights may appear on _____.
A. horizontally-banded buoys
B. vertically-striped buoys
C. yellow buoys
D. spherical buoys
00062. Charted depth is the _____.
A. vertical distance from the chart sounding datum to the ocean bottom, plus the height of tide
B. vertical distance from the chart sounding datum to the ocean bottom
C. average height of water over a specified period of time
D. average height of all low waters at a place

00063. A "full service" Loran-C receiver will provide _____.
A. matching pulse rates of at least 20 stations
B. an automatic on-and-off switch
C. a horizontal matching of all delayed hyperbolic signals
D. automatic signal acquisition and cycle matching
00064. Your vessel's fathometer transmits a signal which is returned 1.5 seconds later. Your vessel is in how much water?
A. 1,800 feet
B. 3,600 feet
C. 5,400 feet
D. 7,200 feet
00065. The LMT of LAN is 1210. Your longitude is 70°30' E. What time would you use to enter the Nautical Almanac to determine the declination of the Sun at LAN?
A. 1842
B. 1652
C. 0728
D. 0652
00066. A veering wind will do which of the following?
A. Change direction in a clockwise manner in the Northern Hemisphere
B. Circulate about a low pressure center in a counterclockwise manner in the Northern Hemisphere
C. Vary in strength constantly and unpredictably
D. Circulate about a high pressure center in a clockwise manner in the Southern Hemisphere
00067. Which of the following is the correct definition of height of tide?
A. The vertical distance from the tidal datum to the level of the water at any time
B. The vertical difference between the heights of low and high water
C. The vertical difference between a datum plane and the ocean bottom
D. The vertical distance from the surface of the water to the ocean floor
00068. A position obtained by taking lines of position from one object at different times and advancing them to a common time is a(n) _____.
A. dead reckoning position
B. estimated position
C. fix
D. running fix
00069. The parallax angle will vary the most with the time of year for _____.
A. Venus
B. Jupiter
C. Saturn
D. Polaris

00070. Mean lower low water is the reference plane used for _____.
- A. all vertical measurements
 - B. heights above water for lights, mountains, etc.
 - C. soundings on the east and west coasts
 - D. water depths on the east coast only
00071. A preferred-channel buoy may be _____.
- A. lettered
 - B. spherical
 - C. showing a white light
 - D. All of the above
00072. The datum from which the predicted heights of tides are reckoned in the tide tables is _____.
- A. mean low water
 - B. the same as that used for the charts of the locality
 - C. the highest possible level
 - D. given in table three of the tide tables
00073. After initial turn-on, most modern Loran-C receivers will be automatically tracking within _____.
- A. 1 minute
 - B. 3 minutes
 - C. 5 minutes
 - D. 10 minutes
00074. When operated over a muddy bottom, a fathometer may indicate _____.
- A. a shallow depth reading
 - B. a zero depth reading
 - C. no depth reading
 - D. two depth readings
00075. The LMT of LAN is 1152. Your longitude is 73°15' E. What time would you use to enter the Nautical Almanac to determine the declination of the Sun at LAN?
- A. 0652
 - B. 0659
 - C. 1852
 - D. 1859
00076. In the Northern Hemisphere, a wind that shifts counterclockwise is a _____.
- A. veering wind
 - B. backing wind
 - C. reverse wind
 - D. chinook wind
00077. When there are small differences between the heights of two successive high tides or two successive low tides, the tides are called _____.
- A. diurnal
 - B. semi-diurnal
 - C. solar
 - D. mixed

00078. A single line of position combined with a dead reckoning position results in a(n) _____.
A. assumed position
B. estimated position
C. fix
D. running fix
00079. The rate of increase in hour angle is the slowest for _____.
A. the Sun
B. the Moon
C. Mars
D. Mercury
00080. When the moon is at first quarter or third quarter phase, what type of tides will occur?
A. Apogean
B. Perigean
C. Neap
D. Spring
00081. A buoy with a composite group-flashing light indicates a(n) _____.
A. bifurcation
B. fish net area
C. anchorage area
D. dredging area
00082. On the west coast of North America, charted depths are taken from _____.
A. high water
B. mean tide level
C. mean low water
D. mean lower low water
00083. All Loran-C transmitting stations are equipped with cesium frequency standards which permit _____.
A. every station in one chain to transmit at the same time
B. each station to transmit without reference to another station
C. on-line transmission of single-line transmitters at the same time
D. each station to only depend on the master for synchronization and signal ratio
00084. When using an echo sounder in deep water, it is NOT unusual to _____.
A. receive a strong return at about 200 fathoms during the day, and one nearer the surface at night
B. receive a first return near the surface during the day, and a strong return at about 200 fathoms at night
C. receive false echoes at a constant depth day and night
D. have to recalibrate every couple of days due to inaccurate readings

00085. Your longitude is 179°59' W. The LMT at this longitude is 23h 56m of the 4th day of the month. Six minutes later your position is 179°59' E longitude. Your LMT and date is now _____.
- A. 00h 02m on the 4th
 - B. 00h 02m on the 5th
 - C. 23h 50m on the 5th
 - D. 00h 02m on the 6th
00086. A weather forecast states that the wind will commence backing. In the Northern Hemisphere, this would indicate that it will _____.
- A. shift in a clockwise manner
 - B. shift in a counterclockwise manner
 - C. continue blowing from the same direction
 - D. decrease in velocity
00087. A tide is called diurnal when _____.
- A. only one high and one low water occur during a lunar day
 - B. the high tide is higher and the low tide is lower than usual
 - C. the high tide and low tide are exactly six hours apart
 - D. two high tides occur during a lunar day
00088. Which of the following positions includes the effects of wind and current?
- A. Dead reckoning position
 - B. Leeway position
 - C. Estimated position
 - D. Set position
00089. The GHA of the first point of Aries is 315° and the GHA of a planet is 150°. What is the right ascension of the planet?
- A. 7 hours
 - B. 11 hours
 - C. 19 hours
 - D. 23 hours
00090. When the moon is new or full, what type of tides occur?
- A. Neap
 - B. Spring
 - C. Diurnal
 - D. Apogean
00091. A preferred-channel buoy will show a _____.
- A. white light whose characteristic is Morse (A)
 - B. group-occulting white light
 - C. composite group-flashing (2 + 1) white light
 - D. composite group-flashing (2 + 1) red or green light
00092. When utilizing a Pacific Coast chart, the reference plane of soundings is _____.
- A. mean low water springs
 - B. mean low water
 - C. mean lower low water
 - D. lowest normal low water

0093. The time interval between the transmission of signals from a pair of Loran-C stations is very closely controlled and operates with _____.
- A. an atomic time standard
 - B. Daylight Savings Time
 - C. Eastern Standard Time
 - D. Greenwich Mean Time
0094. When using a recording depth finder in the open ocean, what phenomena is most likely to produce a continuous trace that may not be from the actual ocean bottom?
- A. Echoes from a deep scattering layer
 - B. Echoes from schools of fish
 - C. Multiple returns reflected from the bottom to the surface and to the bottom again
 - D. Poor placement of the transducer on the hull
0095. The difference in local time between an observer on 114° W and one on 119° W is _____.
- A. 1.25 minutes
 - B. 5 minutes
 - C. 20 minutes
 - D. 75 minutes
0096. A weather forecast states that the wind will commence veering. In the Northern Hemisphere this indicates that the wind will _____.
- A. shift in a clockwise manner
 - B. shift in a counterclockwise manner
 - C. continue blowing from the same direction
 - D. increase in velocity
0097. The lunar or tidal day is _____.
- A. about 50 minutes shorter than the solar day
 - B. about 50 minutes longer than the solar day
 - C. about 10 minutes longer than the solar day
 - D. the same length as the solar day
0098. A position that is obtained by applying predicted current and wind effect to your vessel's course and speed is known as a(n) _____.
- A. dead reckoning position
 - B. estimated position
 - C. fix
 - D. None of the above
0100. You are underway on course 050° T and your maximum speed is 12 knots. The eye of a hurricane bears 080° T, 100 miles from your position. The hurricane is moving towards 265° T at 22 knots. What course should you steer at 12 knots to have the maximum CPA?
- A. 219°
 - B. 208°
 - C. 199°
 - D. 190°

00101. A lighted preferred-channel buoy may show a _____.
A. fixed red light
B. Morse (A) white light
C. composite group-flashing light
D. yellow light
00102. Which of the following statements about a DMAHTC chart with stock no. 23BHA23433 is TRUE?
A. This is a non-navigational or special purpose chart.
B. It is not included in the portfolio.
C. It is a chart of an area in subregion 23.
D. It depicts a major portion of an ocean.
00103. In Loran-C the high accuracy of atomic time and frequency controls allows each station to operate _____.
A. at higher frequencies
B. on schedule, independently
C. at 1,975 kHz
D. in a multiplex phase
00104. What should you apply to a fathometer reading to determine the depth of water?
A. Subtract the draft of the vessel
B. Add the draft of the vessel
C. Subtract the sea water correction
D. Add the sea water correction
00105. If the GMT is 1500, the time at 75° E longitude is _____.
A. 1000
B. 1500
C. 1700
D. 2000
00106. A local wind which occurs during the daytime and is caused by the different rates of warming of land and water is a _____.
A. foehn
B. chinook
C. land breeze
D. sea breeze
00107. The average height of the surface of the sea for all stages of the tide over a 19 year period is called _____.
A. mean high water
B. mean low water
C. half-tide level
D. mean sea level
00108. A position that is obtained by using two or more lines of position from known fixed objects, at about the same time, is known as a _____.
A. dead reckoning position
B. estimated position
C. fix
D. running fix

00109. While proceeding along the Norwegian coast on course 039° T, you sight the black-yellow-black banded buoy shown in illustration D021NG bearing 053° T. What action should you take?
- A. Alter course to 053° and leave the buoy close aboard on either side
 - B. Maintain course
 - C. Alter course to 060° and ensure that the bearings decrease
 - D. Alter course to port to rapidly open the bearing to the right
00110. A millibar is a unit of _____.
- A. humidity
 - B. precipitation
 - C. pressure
 - D. temperature
00111. Green lights may appear on _____.
- A. horizontally-banded buoys
 - B. vertically-striped buoys
 - C. yellow buoys
 - D. spherical buoys
00112. Which of the following chart numbers indicates a DMAHTC chart designed for inshore coastwise navigation?
- A. LCORR5868
 - B. COMBT800564
 - C. 17XHA17365
 - D. 16AC016595
00113. The type of transmission used in Loran-C is a _____.
- A. single pulse
 - B. wide pulse
 - C. multipulse
 - D. narrow pulse
00114. The readings from most fathometers indicate the _____.
- A. actual depth of water
 - B. actual depth of water below keel
 - C. average depth from waterline to hard bottom
 - D. average depth of water to soft bottom
00115. The date is the same all over the world at _____.
- A. 0000 GMT
 - B. 1200 GMT
 - C. 0000 LMT for an observer at 90° E longitude
 - D. no time
00116. What wind results from a land mass cooling more quickly at night than an adjacent water area?
- A. Coastal breeze
 - B. Sea breeze
 - C. Land breeze
 - D. Mistral

00117. Mean high water is the average height of _____.
A. the higher high waters
B. the lower high waters
C. the lower of the two daily tides
D. all high waters
00118. Which of the following describes an accurate position that is NOT based on any prior position?
A. Dead reckoning position
B. Estimated position
C. Fix
D. Running fix
00119. While proceeding along the Mediterranean coast of Spain, you sight the black and yellow buoy shown in illustration D020NG. Your course is 039° T, and the buoy bears 053° T. What action should you take?
A. Alter course to 053° T and pass the buoy close aboard on either side
B. Alter course to 060° and ensure that the bearings decrease
C. Maintain course and ensure that the bearings increase
D. Alter course towards the buoy and leave the buoy well clear on either side
00120. You are underway on course 050° T and your maximum speed is 13 knots. The eye of a hurricane bears 100° T, 120 miles from your position. The hurricane is moving towards 275° T at 25 knots. If you maneuver at 13 knots to avoid the hurricane, what could be the maximum CPA?
A. 72 miles
B. 78 miles
C. 83 miles
D. 89 miles
00121. A safe water mark may be _____.
A. vertically striped
B. spherical
C. showing a white light
D. All of the above
00122. The subregions of the United States Gulf and East Coasts are numbered 11, 12, and 13 within the chart numbering system. Which of the following chart numbers indicates a chart for either the Gulf or East Coast?
A. 11250
B. 18411
C. 21228
D. 17136
00123. If the radio signal ground wave extends out for less distance than the minimum skywave distance, there is an area in which no signal is received. This is called the _____.
A. skip zone
B. blackout zone
C. diffraction zone
D. shadow zone

00124. An electronic depth finder operates on the principle that _____.
A. radio signals reflect from a solid surface
B. sound waves travel at a constant speed through water
C. radar signals travel at a constant speed through water
D. pressure increases with depth
00125. The GMT is 0445 and your zone description is +1, your zone time is _____.
A. 0445
B. 0345
C. 0545
D. 1545
00126. A katabatic wind blows _____.
A. up an incline due to surface heating
B. in a circular pattern
C. down an incline due to cooling of the air
D. horizontally between a high and a low pressure area
00127. Mean low water is the average height of _____.
A. the surface of the sea
B. high waters and low waters
C. all low waters
D. the lower of the two daily tides
00128. A position obtained by applying only your vessel's course and speed to a known position is a _____.
A. dead reckoning position
B. fix
C. probable position
D. running fix
00129. In working out a local apparent noon sight for your latitude, you subtract the H_o from 90° . The 90° represents the angular distance from _____.
A. the equator to the elevated pole
B. your horizon to your zenith
C. your zenith to the elevated pole
D. the geographical position of the Sun to the elevated pole
00130. The distance between the surface of the water and the tidal datum is the _____.
A. range of tide
B. height of tide
C. charted depth
D. actual water depth
00131. A vertically-striped buoy may be _____.
A. striped black and green
B. striped black and yellow
C. lighted with a red light
D. lighted with a white light

00132. The value of sixty nautical miles per degree of geodetic latitude is most correct at _____.
- A. the equator
 - B. latitude 45°
 - C. the poles
 - D. all latitudes
00133. The line connecting the Loran-C master station with a secondary station is called the _____.
- A. focus line
 - B. base line
 - C. side line
 - D. center line
00134. The recording fathometer produces a graphic record of the _____.
- A. bottom contour only up to depths of 100 fathoms
 - B. depth underneath the keel against a time base
 - C. contour of the bottom against a distance base
 - D. depth of water against a distance base
00135. The standard meridian for the time zone +1 is _____.
- A. 0°
 - B. 7 1/2° W
 - C. 15° W
 - D. 7 1/2° E
00136. Which Beaufort force indicates a wind speed of 65 knots?
- A. Beaufort force 0
 - B. Beaufort force 6.5
 - C. Beaufort force 12
 - D. Beaufort force 15
00137. Priming of the tides occurs _____.
- A. at times of new and full Moon
 - B. when the Earth, Moon, and Sun are lying approximately on the same line
 - C. when the Moon is between first quarter and full and between third quarter and new
 - D. when the Moon is between new and first quarter and between full and third quarter
00138. The path that a vessel is expected to follow, represented on a chart by a line drawn from the point of departure to the point of arrival, is the _____.
- A. DR plot
 - B. track line
 - C. heading
 - D. estimated course
00139. What is the geographic longitude of a body whose GHA is 215°15'?
- A. 35°15' W
 - B. 35°15' E
 - C. 144°45' E
 - D. 144°45' W

00140. You are underway on course 050° T and your maximum speed is 12 knots. The eye of a hurricane bears 080° T, 100 miles from your position. The hurricane is moving towards 265° T at 22 knots. If you maneuver at 12 knots to avoid the hurricane, what could be the maximum CPA?
- A. 76 miles
 - B. 69 miles
 - C. 63 miles
 - D. 56 miles
00141. You are enroute to assist vessel A. Vessel A is underway at 6 knots on course 133° T, and bears 042° T, 105 miles from you. What is the time to intercept if you make 10 knots?
- A. 17h 03m
 - B. 17h 19m
 - C. 17h 30m
 - D. 17h 49m
00142. Which of the following nautical charts is intended for coastwise navigation outside of outlying reefs and shoals?
- A. Approach charts
 - B. General charts
 - C. Sailing charts
 - D. Coast charts
00144. In modern fathometers the sonic or ultrasonic sound waves are produced electrically by means of a(n) _____.
- A. transmitter
 - B. transducer
 - C. transceiver
 - D. amplifier
00145. The standard time meridian for zone description -1 is _____.
- A. 0°
 - B. 7 1/2° W
 - C. 7 1/2° E
 - D. 15° E
00147. Which statement is TRUE concerning equatorial tides?
- A. They occur when the Sun is at minimum declination north or south.
 - B. They occur when the Moon is at maximum declination north or south.
 - C. The difference in height between consecutive high or low tides is at a minimum.
 - D. They are used as the basis for the vulgar establishment of the port.
00148. When possible, a DR plot should always be started from which of the following?
- A. Any position
 - B. A known position
 - C. An assumed position
 - D. None of the above

00149. You are underway on course 050° T and your maximum speed is 13 knots. The eye of a hurricane bears 100° T, 120 miles from your position. The hurricane is moving towards 275° T at 25 knots. What course should you steer at 13 knots to have the maximum CPA?
- A. 339°
 - B. 333°
 - C. 326°
 - D. 320°
00150. An alternating light _____.
- A. shows a light with varying lengths of the lighted period
 - B. shows a light that changes color
 - C. marks an alternate lesser-used channel
 - D. is used as a replacement for another light
00151. Under the U.S. Aids to Navigation System, spherical buoys may be _____.
- A. numbered
 - B. lettered
 - C. lighted
 - D. All of the above
00152. A chart with a natural scale of 1:160,000 is classified as a _____.
- A. sailing chart
 - B. general chart
 - C. coast chart
 - D. harbor chart
00153. In illustration D004NG, the line extending beyond the stations at A and B is referred to as the _____.
- A. slave line
 - B. zero line
 - C. baseline extension
 - D. centerline
00154. What factor has the greatest effect on the amount of gain required to obtain a fathometer reading?
- A. Salinity of water
 - B. Temperature of water
 - C. Atmospheric pressure
 - D. Type of bottom
00156. In reading a weather map, closely spaced pressure gradient lines would indicate _____.
- A. high winds
 - B. high overcast clouds
 - C. calm or light winds
 - D. fog or steady rain
00157. Tropic tides are caused by the _____.
- A. Moon being at its maximum declination
 - B. Moon crossing the equator
 - C. Sun and Moon both being near 0° declination
 - D. Moon being at perigee

00158. Discounting slip, if your vessel is turning RPM for 10 knots and making good a speed of 10 knots, the current could be _____.
A. with you at 10 knots
B. against you at 10 knots
C. slack
D. with you at 2 knots
00160. Loran-C ground waves provide position information of reasonable accuracy out to a maximum of _____.
A. 800 miles
B. 1,000 miles
C. 1,200 miles
D. 1,500 miles
00161. How is a safe water mark, that can be passed close aboard on either side, painted and lighted?
A. Black and white stripes with an interrupted quick flashing light
B. Black and red stripes with a Morse (A) light
C. Black and red stripes with an interrupted quick flashing light
D. Red and white stripes with a Morse (A) light
00162. A chart with a scale of 1:80,000 would fall into the category of a _____.
A. sailing chart
B. general chart
C. coast chart
D. harbor chart
00163. Loran-C sky waves provide position information of reasonable accuracy out to more than _____.
A. Loran-C sky waves cannot be used.
B. 1,000 miles
C. 1,500 miles
D. 2,000 miles
00164. The part of a sextant mounted directly over the pivot of the index arm is the _____.
A. index mirror
B. horizon glass
C. micrometer drum
D. telescope
00165. On 6 July 1981, at 1000 zone time, you cross the 180th meridian steaming westward. What is your local time?
A. It is 1000, 5 July.
B. It is 1000, 6 July.
C. It is 2200, 7 July.
D. It is 1000, 7 July.
00166. On the pole side of the high pressure belt in each hemisphere, the pressure diminishes. The winds along these gradients are diverted by the Earth's rotation toward the east and are known as the _____.
A. geostrophic winds
B. doldrums
C. horse latitudes
D. prevailing westerlies

00167. When the Moon's declination is maximum north, which of the following will occur?
- A. Mixed-type tides
 - B. Higher high tides and lower low tides
 - C. Tropic tides
 - D. Equatorial tides
00168. Your vessel is making way through the water at a speed of 12 knots. Your vessel traveled 30 nautical miles in 2 hours 20 minutes. What current are you experiencing?
- A. A following current at 2.0 knots
 - B. A head current of 2.0 knots
 - C. A following current of 0.9 knot
 - D. A head current of 0.9 knot
00169. You want to transit Hell Gate on 23 July 1983. What is the period of time around the AM (ZD +4) slack before ebb when the current will be less than 0.5 knot?
- A. 0939 to 0957
 - B. 0943 to 0953
 - C. 0844 to 0852
 - D. 0348 to 0356
00171. Under the U.S. Aids to Navigation System, a lighted buoy with a spherical topmark marks _____.
- A. safe water
 - B. the port side of the channel
 - C. a hazard to navigation
 - D. the position of underwater cables
00172. A chart with a scale of 1:45,000 is a _____.
- A. harbor chart
 - B. coast chart
 - C. general chart
 - D. sailing chart
00173. The usable range of Loran-C is _____.
- A. limited to under 500 miles
 - B. as much as 3,000 miles, using sky waves
 - C. less than that of Loran-A
 - D. limited to sky waves
00174. Which statement is TRUE concerning an "inverting type" sextant telescope?
- A. It is also known as the "erect image" type.
 - B. It has fewer lenses than the erect type.
 - C. It absorbs more light than the erect type.
 - D. When only one telescope is provided with a sextant, it is usually of this type.

00175. On 5 July 1981, at 1200 zone time, you cross the 180th meridian steaming westward. What is your local time?
- A. It is 1200, 4 July.
 - B. It is 1200, 5 July.
 - C. It is 1200, 6 July.
 - D. It is 2400, 6 July.
00176. What wind pattern has the most influence over the movement of frontal weather systems over the North American continent?
- A. Subpolar easterlies
 - B. Northeast trades
 - C. Prevailing westerlies
 - D. Dominant southwesterly flow
00177. How many high waters usually occur each day on the East Coast of the United States?
- A. One
 - B. Two
 - C. Three
 - D. Four
00178. You are steering a southerly course, and you note that the chart predicts an easterly current. Without considering wind, how may you allow for the set?
- A. Head your vessel slightly to the right
 - B. Head your vessel slightly to the left
 - C. Decrease your speed
 - D. Increase your speed
00179. You are proceeding up a channel at night. It is marked by a range which bears 185° T. You steady up on a compass course of 180° with the range in line dead ahead. This indicates that you(r) _____.
- A. must come right to get on the range
 - B. course is in error
 - C. compass has some easterly error
 - D. are being affected by a southerly current
00181. Which navigational mark may be lettered?
- A. An unlighted, green, can buoy
 - B. A spherical buoy
 - C. A red buoy
 - D. A port side dayshape
00182. The scale on a chart is given as 1:5,000,000. This means that _____.
- A. 1 inch is equal to 5,000 inches on the Earth's surface
 - B. 1 nautical mile on the chart is equal to 5,000 inches on the Earth's surface
 - C. 1 inch is equal to 5,000,000 inches on the Earth's surface
 - D. 1 nautical mile on the chart is equal to 5,000,000 inches on the Earth's surface

00183. The maximum reliable ground wave range of Loran-C is approximately _____.
- A. 700 miles
 - B. 900 miles
 - C. 1,200 miles
 - D. 2,300 miles
00184. When the index and horizon mirrors of a properly adjusted sextant are at an angle of 45° to each other, the arc reads _____.
- A. 22 1/2°
 - B. 45°
 - C. 60°
 - D. 90°
00185. A ship is in longitude 54°00' W on a true course of 270°. The ship's clocks are on the proper time zone. At what longitude should the clocks be changed to maintain the proper zone time?
- A. 45°00' W
 - B. 52°30' W
 - C. 60°00' W
 - D. 67°30' W
00186. In the doldrums, you will NOT have _____.
- A. high relative humidity
 - B. frequent showers and thunderstorms
 - C. steep pressure gradients
 - D. frequent calms
00187. Which statement is TRUE concerning apogean tides?
- A. They occur only at quadrature.
 - B. They occur when the Moon is nearest the Earth.
 - C. They cause diurnal tides to become mixed.
 - D. They have a decreased range from normal.
00189. While steering a course of 150° T, you wish to observe the Sun for a speed check. What would the azimuth have to be?
- A. 060° T
 - B. 090° T
 - C. 150° T
 - D. 240° T
00191. Safe water buoys may show _____.
- A. flashing red lights only
 - B. flashing green lights only
 - C. white lights only
 - D. yellow lights only
00192. The description "Racon" beside an illustration on a chart would mean a _____.
- A. radar conspicuous beacon
 - B. circular radiobeacon
 - C. radar transponder beacon
 - D. radar calibration beacon

00193. In using Loran-C, skywave reception gives greater range but is _____.
- A. only accurate during daylight hours
 - B. less accurate
 - C. only accurate at twilight
 - D. more accurate than using ground waves
00194. The horizon glass of a sextant is _____.
- A. silvered on its half nearer the frame
 - B. mounted on the index arm
 - C. between the horizon and the shade glasses
 - D. All of the above
00195. The equation of time is 8m 00s. The mean Sun is ahead of the apparent Sun. If you are 2° W of the central meridian of your time zone, when will the apparent Sun cross your meridian?
- A. 1216
 - B. 1208
 - C. 1200
 - D. 1152
00196. The area of strong westerly winds occurring between 40° S and 60° S latitude is called the _____.
- A. polar easterlies
 - B. prevailing westerlies
 - C. roaring forties
 - D. jet streams
00197. Chart legends printed in capital letters show that the associated landmark is _____.
- A. conspicuous
 - B. inconspicuous
 - C. a government facility or station
 - D. a radio transmitter
00198. You are enroute to assist vessel A. Vessel A is underway at 6 knots on course 133° T, and bears 343° T at 92 miles from you. What is the time to intercept if you make 9 knots?
- A. 7h 44m
 - B. 7h 12m
 - C. 6h 40m
 - D. 6h 08m
00199. Civil twilight occurs at 0558 zone time on 30 December 1981. Your DR position at that time is LAT 15°02' N, LONG 46°02' W. Which statement concerning the planets available for morning sights is TRUE?
- A. At 0558, Mars can be used for an ex-meridian observation.
 - B. Venus, Jupiter, and Mars sights will yield a good three line fix.
 - C. Saturn will be near the prime vertical.
 - D. Venus will be visible low in the western sky.

00200. You observe the upper limb of the Sun at a sextant altitude (hs) of $4^{\circ}15.8'$ on 16 December 1981. The index error is 2.6° on the arc. The height of eye is 58 feet. The temperature is 5° F, and the barometer reads 1027.8 millibars. What is the observed altitude (H_o)?
- A. $3^{\circ}36.4'$
 - B. $3^{\circ}37.0'$
 - C. $3^{\circ}38.2'$
 - D. $4^{\circ}08.7'$
00201. What is a lighted safe water mark fitted with to aid in its identification?
- A. Red and white retroreflective material
 - B. A spherical topmark
 - C. A sequential number
 - D. A red and white octagon
00202. On charts of U.S. waters, a magenta marking is NOT used for marking a _____.
- A. radiobeacon
 - B. lighted buoy
 - C. prohibited area
 - D. 5 fathom curve
00203. In any Loran-C chain, there are three or more stations transmitting pulses which radiate in all directions. One of the stations is the master station, and the others in the chain are the _____.
- A. radio stations
 - B. secondary stations
 - C. monitor stations
 - D. pulse stations
00204. Because of the reflecting properties of a sextant, if the sextant altitude reads 60° on the limb, the actual arc of the limb from 0° to the 60° reading is _____.
- A. 20°
 - B. 30°
 - C. 40°
 - D. 60°
00205. The difference between local apparent time (LAT) and local mean time (LMT) is indicated by the _____.
- A. equation of time
 - B. difference of longitude between the local and central meridian in time units
 - C. longitude in time units
 - D. zone description
00206. The winds you would expect to encounter in the North Atlantic between latitudes 5° and 30° are known as the _____.
- A. doldrums
 - B. westerlies
 - C. trades
 - D. easterlies

00207. An important lunar cycle affecting the tidal cycle is called the nodal period. How long is this cycle?
- A. 16 days
 - B. 18 days
 - C. 6 years
 - D. 19 years
00208. What is the maximum current you could expect at 0630 (ZD +5) on 28 January 1983 at Nantucket Shoals?
- A. 0.55 knot
 - B. 0.70 knot
 - C. 0.85 knot
 - D. 1.00 knot
00209. The West Wind Drift is located _____.
- A. near 60' S
 - B. on each side of the Equatorial Current
 - C. in the North Atlantic between Greenland and Europe
 - D. in the South Pacific near 5' S
00211. The light rhythm of Morse (A) is shown on _____.
- A. preferred-channel buoys
 - B. starboard- or port-side buoys
 - C. special marks
 - D. safe water buoys
00212. Which aid is NOT marked on a chart with a magenta circle?
- A. Radar station
 - B. Radar transponder beacon
 - C. Radiobeacon
 - D. Aero light
00213. In illustration D001NG, the station located at "A" is the _____.
- A. on station
 - B. off station
 - C. master station
 - D. slave station
00214. A sextant having an index error that is "on the arc" has a _____.
- A. positive correction
 - B. dip error
 - C. negative correction
 - D. semidiameter error
00215. The equation of time is 12m 00s and the mean Sun is ahead of the apparent Sun. If you are on the central meridian of your time zone, at what zone time will the apparent Sun cross the meridian?
- A. 1148
 - B. 1200
 - C. 1212
 - D. It cannot be determined from the information given.

00216. The prevailing winds in the band of latitude from approximately 5° N to 30° N are the _____.
- A. prevailing westerlies
 - B. northeast trade winds
 - C. southeast trade winds
 - D. doldrums
00217. In certain areas of the world there is often a slight fall in tide during the middle of the high water period. The practical effect is to create a longer period of stand at higher water. This special feature is called a(n) _____.
- A. apogean tide
 - B. double high water
 - C. perigean tide
 - D. bore
00218. A line of position may be a(n) _____.
- A. irregular line
 - B. straight line
 - C. arc
 - D. Any of the above
00219. The predicted time that the flood begins at the entrance to Delaware Bay is 1526. You are anchored off Chestnut St. in Philadelphia. If you get underway bound for sea at 1300 and turn for 13 knots, at what point will you lose the flood current?
- A. Mile 52
 - B. New Castle
 - C. Marcus Hook
 - D. Billingsport
00220. At 0000 you fix your position and plot a new DR track line. At 0200 you again fix your position and it is 0.5 mile east of your DR. Which statement is TRUE?
- A. The current is westerly at 0.5 knot.
 - B. You must increase speed to compensate for the current.
 - C. The current cannot be determined.
 - D. The drift is 0.25 knot.
00221. In the United States, a buoy having red and white vertical stripes would have a light characteristic of _____.
- A. group occulting
 - B. Morse (A)
 - C. interrupted quick flashing
 - D. quick flashing
00222. Which of the following statements concerning illustration D010NG is correct? (Soundings and heights are in meters)
- A. Maury Lightship swings about her anchor on a circle with a 21-meter diameter.
 - B. The position of the lightship is indicated by the center of the star on the symbol's mast.
 - C. There is a 12 meter deep hole inside the 5-meter curve just west of Beito Island.
 - D. The sunken wreck southwest of Beito Island shows the hull or superstructure above the sounding datum.

00223. In the Loran-C configuration shown in illustration D003NG, the stations located at X, Y, and Z are called _____.
- A. repeater stations
 - B. secondary stations
 - C. composite stations
 - D. alternate stations
00224. A sextant having an index error that is "off the arc" has a _____.
- A. positive correction
 - B. dip error
 - C. negative correction
 - D. semidiameter error
00225. The equation of time is 8m 40s. The apparent Sun is ahead of the mean Sun. If you are on the central meridian of your time zone, the apparent Sun will cross your meridian at _____.
- A. 11-51-20 ZT
 - B. 12-00-00 ZT
 - C. 12-04-20 ZT
 - D. 12-08-40 ZT
00226. What winds blow towards the equator from the area about 30° north?
- A. Prevailing westerlies
 - B. Roaring thirties
 - C. Equatorial flow
 - D. Northeast trades
00227. The class of tide that prevails in the greatest number of important harbors on the Atlantic Coast is _____.
- A. interval
 - B. mixed
 - C. diurnal
 - D. semidiurnal
00228. Illustration D042NG represents the symbols used on radiofacsimile weather charts. Which of these symbols indicates a convergence line?
- A. L
 - B. F
 - C. M
 - D. Q
00229. The level of mean high water is used to indicate the shoreline _____.
- A. when there is a large tidal fluctuation
 - B. on all U. S. charts
 - C. only on charts showing off shore coasts
 - D. where the coastline does not change significantly between high and low water
00230. If the LORAN-C ground wave does NOT extend out as far as the skywave skip distance, there will be a skip zone in which _____.
- A. no LORAN-C signal is received
 - B. only ground waves are received
 - C. only skywaves are received
 - D. both ground waves and skywaves are received

00231. You are outbound in a buoyed channel on course 015° T. You sight a white light showing a Morse (A) characteristic bearing 359° relative. For safety, you should _____.
- A. change course to 359° T to pass near to the buoy
 - B. continue on course and pass near the buoy
 - C. alter course to 000° T and leave the buoy well clear to starboard
 - D. check the chart to see where the marked danger lies in relation to the buoy
00232. Which of the following statements concerning the chartlet in illustration D010NG is TRUE? (Soundings and heights are in meters)
- A. Maury lightship is visible for 17 miles.
 - B. The bottom to the south-southeast of the lightship is soft coral.
 - C. There is a 12-meter deep west of Beito Island and inside the 5-meter line.
 - D. There is a dangerous eddy southeast of Beito Island.
00233. To determine which Loran-C signal to use, examine the chart and find a set of LOP's which result in a good crossing angle. A good crossing angle should be at least _____.
- A. 10°
 - B. 15°
 - C. 25°
 - D. 30°
00235. When the equation of time is taken from the Nautical Almanac for use in celestial navigation, it is used to determine _____.
- A. zone time
 - B. sunrise
 - C. time of local apparent noon
 - D. local mean time
00236. The winds with the greatest effect on the set, drift, and depth of the equatorial currents are the _____.
- A. doldrums
 - B. horse latitudes
 - C. trade winds
 - D. prevailing westerlies
00237. Neap tides occur when the _____.
- A. Moon is in its first quarter and third quarter phases
 - B. Sun and Moon are on opposite sides of the Earth
 - C. Moon's declination is maximum and opposite to that of the Sun
 - D. Sun and Moon are in conjunction
00238. The predicted time that the flood begins at the entrance to Delaware Bay is 1526. You are anchored off Chestnut St. in Philadelphia. If you get underway bound for sea at 1430 and turn for 11 knots, at what point will you lose the ebb current?
- A. New Castle
 - B. Liston Pt.
 - C. Arnold Pt.
 - D. Ship John Shoal Lt.

00239. As you enter a channel from seaward in a U.S. port, the numbers on the starboard side buoys _____.
- A. decrease and the buoys are black
 - B. increase and the buoys are green
 - C. decrease and the buoys are red
 - D. increase and the buoys are red
00241. A spherical buoy may be _____.
- A. numbered
 - B. lettered
 - C. lighted
 - D. All of the above
00243. The loran lines drawn on navigation charts represent which of the following?
- A. Ground waves
 - B. Skywaves
 - C. Either ground waves or skywaves interchangeably
 - D. An average between ground wave and skywave positions
00245. Yesterday you took a time tick using the 1200 GMT broadcast, and the chronometer read 11h 59m 59s. Today at the 1200 GMT time tick the chronometer read 00h 00m 01s. What is the chronometer error?
- A. Gaining 2 seconds
 - B. Losing 2 seconds
 - C. Fast 2 seconds
 - D. Fast 1 second
00246. The consistent winds blowing from the horse latitudes to the doldrums are called the _____.
- A. prevailing westerlies
 - B. polar easterlies
 - C. trade winds
 - D. roaring forties
00247. Neap tides occur _____.
- A. at the start of spring, when the Sun is nearly over the equator
 - B. only when the Sun and Moon are on the same sides of the Earth and are nearly in line
 - C. when the Sun and Moon are at approximately 90° to each other, as seen from the Earth
 - D. when the Sun, Moon, and Earth are nearly in line, regardless of alignment order
00248. What is the index error of sextant A in illustration D050NG?
- A. 0' 10" off the arc
 - B. 0' 10" on the arc
 - C. 3' 00" off the arc
 - D. 4' 20" off the arc
00251. A mid-channel buoy, if lighted, will show a _____.
- A. fixed red light
 - B. Morse (A) white light
 - C. green light
 - D. flashing red light

00252. A large automated navigational buoy, such as those that have replaced some lightships, would be shown on a chart by which symbol in illustration D015NG?
- A. A
 - B. B
 - C. C
 - D. D
00253. Loran-C is what type of system?
- A. Reflected electron
 - B. Electrical radiation
 - C. Quarterpoint electrical navigation
 - D. Hyperbolic radio navigation
00255. On March 17, at 0500 zone time, you cross the 180th meridian steaming eastward to west longitude. What is your local time?
- A. You are in -12 time zone.
 - B. It is 1700, March 18.
 - C. It is 0500, March 16.
 - D. It is 0500, March 18.
00256. The belt of light and variable winds between the westerly wind belt and the northeast trade winds is called the _____.
- A. subtropical high pressure belt
 - B. intertropical convergence zone
 - C. doldrum belt
 - D. polar frontal zone
00257. Spring tides occur _____.
- A. at the start of spring, when the Sun is nearly over the equator
 - B. only when the Sun and Moon are on the same side of the Earth and nearly in line
 - C. when the Sun and Moon are at approximately 90° to each other as seen from the Earth
 - D. when the Sun, Moon, and Earth are nearly in line, in any order
00259. Illustration D042NG represents the symbols used on radiofacsimile weather charts. The symbol indicated at letter "Q" represents a _____.
- A. convergence zone
 - B. squall line
 - C. convergence line
 - D. weather boundary
00260. The National Ocean Service publishes the _____.
- A. Light Lists
 - B. Coast Pilots
 - C. pilot charts
 - D. Sailing Directions

00261. You are heading out to sea in a buoyed channel and see a quick-flashing green light on a buoy ahead of you. In U.S. waters, you should leave the buoy _____.
- A. well clear on either side
 - B. about 50 yards off on either side
 - C. to port
 - D. to starboard
00262. Which of the buoy symbols in illustration D032NG indicates a safe water mark?
- A. A
 - B. B
 - C. C
 - D. D
00263. Loran-C uses the multiple pulse system because _____.
- A. less signal energy is necessary for receiver operation
 - B. more signal energy is available at the receiver
 - C. it significantly increases the peak power
 - D. it increases the signal capacity
00264. Which of the four adjustable errors in the sextant is the principle cause of index error?
- A. Telescope not being parallel to the frame
 - B. Index mirror and horizon glass not being parallel
 - C. Index mirror not being perpendicular to the frame
 - D. Horizon glass not being perpendicular to the frame
00265. It is 1200 local time for an observer at 54° E longitude. Which of the following is TRUE?
- A. It is afternoon at Greenwich.
 - B. It is midnight at 126° E longitude.
 - C. The observer is in time zone -4.
 - D. All of the above are true.
00266. The horse latitudes are characterized by _____.
- A. weak pressure gradients and light, variable winds
 - B. the formation of typhoons or hurricanes in certain seasons
 - C. steady winds in one direction for six months followed by wind reversal for the next six months
 - D. steady winds generally from the southeast in the Southern Hemisphere
00268. Illustration D042NG represents the symbols used on radiofacsimile weather charts. The symbol indicated at letter "L" represents a _____.
- A. convergence line
 - B. maritime air mass
 - C. warm front
 - D. convergence zone

00269. The wind at Frying Pan shoals has been south-southwesterly at an average velocity of 30 knots. The predicted set and drift of the rotary current are 232° at 0.8 knot. What current should you expect?
- A. 065° at 1.2 knots
 - B. 092° at 1.3 knots
 - C. 139° at 0.6 knot
 - D. 224° at 0.4 knot
00271. Your vessel is leaving New York harbor in dense fog. As the vessel slowly proceeds toward sea, you sight a green can buoy on the starboard bow. Which of the following actions should you take?
- A. Turn hard right to get back into the channel
 - B. Pass the buoy close to, leaving it to your port
 - C. Stop and fix your position
 - D. Stand on, leaving the buoy to your starboard
00272. What does the symbol in illustration DO33NG indicate on a chart?
- A. A sunken vessel marked by a buoy
 - B. A safe water beacon
 - C. A red and white can buoy
 - D. A can buoy with a rotating white light
00273. Loran-C is which type of navigation system?
- A. Hyperbolic, long-range navigation system
 - B. Short-range electronic
 - C. Long-range, high frequency navigation system
 - D. Long-range, with a frequency of 1950 kHz
00274. Which of the four adjustable errors in the sextant causes side error?
- A. Horizon glass not being perpendicular to the frame
 - B. Index mirror not being perpendicular to the frame
 - C. Telescope not being parallel to the frame
 - D. Elliptical centering error
00276. The region of high pressure extending around the Earth at about 35° N latitude is called the _____.
- A. prevailing westerlies
 - B. horse latitudes
 - C. troposphere
 - D. doldrums
00277. Your vessel goes aground in soft mud. You would have the best chance of refloating it on the next tide if it grounded at _____.
- A. low water neap
 - B. low water spring
 - C. high water neap
 - D. high water spring
00278. You are underway on course 050° T and your maximum speed is 11 knots. The eye of a hurricane bears 070° T, 80 miles from your position. The hurricane is moving towards 270° T at 19 knots. If you maneuver at 11 knots to avoid the hurricane, what could be the maximum CPA?
- A. 84 miles
 - B. 79 miles
 - C. 74 miles
 - D. 66 miles

00281. A lighted buoy to be left to starboard, when entering a U.S. port from seaward, shall have a _____.
- A. white light
 - B. red light
 - C. green light
 - D. light characteristic of Morse (A)
00282. The symbol which appears beside a light on a chart reads "Gp Fl R (2) 10 sec 160 ft 19M". Which of the following describes the light?
- A. It is visible 10 miles.
 - B. Its distinguishing number is "19M".
 - C. It has a radar reflector.
 - D. None of the above
00283. Loran-C operates on a single frequency centered on _____.
- A. 100 kHz
 - B. 500 kHz
 - C. 1,850 kHz
 - D. 1,950 kHz
00284. The marine sextant is subject to seven different types of errors, four of which may be corrected by the navigator. An error NOT correctable by the navigator is _____.
- A. index error
 - B. prismatic error
 - C. perpendicularity of the horizon glass
 - D. perpendicularity of the index mirror
00286. On the pole side of the trade wind belt, there is an area of high pressure with weak pressure gradients and light, variable winds. This area is called the _____.
- A. prevailing westerlies
 - B. geostrophic winds
 - C. doldrums
 - D. horse latitudes
00287. The datum from which the predicted heights of tides are reckoned in the tide tables is the same as that used for the charts of the locality. The depression of the datum below mean sea level for Hampton Roads, Virginia is _____.
- A. between -.7 and +.5 feet
 - B. between 1.9 and 3.2 feet
 - C. 4.1 feet
 - D. 1.2 feet
00288. When using a radar in an unstabilized mode, fixes are determined most easily from _____.
- A. center bearings
 - B. tangent bearings
 - C. ranges
 - D. objects that are close aboard

00290. The true wind is from 330° T, speed 6 knots. You want the apparent wind to be 30 knots from 10° on your port bow. To what course and speed must you change?
- A. Cn 240°, 28.0 knots
 - B. Cn 270°, 28.0 knots
 - C. Cn 180°, 30.0 knots
 - D. Cn 090°, 32.5 knots
00291. A buoy marking a wreck may be _____.
- A. showing a green light
 - B. lettered with an occulting light
 - C. numbered and showing a yellow light
 - D. numbered and showing a white light
00292. The symbol which appears beside a light on a chart reads "Gp Fl R (2) 10 sec 160 ft 19M". Which characteristic does the light possess?
- A. It is visible two nautical miles.
 - B. Its distinguishing number is "19M".
 - C. It has a red light.
 - D. It flashes once every ten seconds.
00293. The use of pulse groups and extremely precise timing at each Loran-C station makes possible the use of _____.
- A. high frequency pulses
 - B. combinations of high and low frequency pulses
 - C. the same frequency for all stations in a chain
 - D. varied long and short pulses
00294. Which of the following is a nonadjustable error of the sextant?
- A. Prismatic error
 - B. Index error
 - C. Side error
 - D. Error of collimation
00295. The difference (measured in degrees) between the GHA of the body and the longitude of the observer is the _____.
- A. right ascension
 - B. meridian angle
 - C. SHA of the observer
 - D. zenith distance
00296. The wind flow from the horse latitudes to the doldrums is deflected due to _____.
- A. Coriolis force
 - B. the mid-latitude, semi-permanent high
 - C. differing atmospheric pressures
 - D. the prevailing westerlies
00297. The tides in Boston Harbor generally _____.
- A. are diurnal in nature
 - B. have their variations caused by the changing declination of the Moon
 - C. have a greater range than the tides in Gulf Coast ports
 - D. All of the above

00298. A great circle crosses the equator at 173° E. It will also cross the equator at what other longitude?
- A. 7° W
 - B. 73° E
 - C. 73° W
 - D. 173° W
00299. Steady precipitation is typical of _____.
- A. coming cold weather conditions
 - B. a warm front weather condition
 - C. high pressure conditions
 - D. scattered cumulus clouds
00300. Which of the symbols in illustration D018NG represents a warm front?
- A. A
 - B. B
 - C. C
 - D. D
00301. In the U.S. Aids to Navigation System, lateral aids as seen entering from seaward will display lights with which characteristic?
- A. Flashing
 - B. Occulting
 - C. Quick Flashing
 - D. Any of the above
00302. Which symbol represents a 20-fathom curve?
- A. -.-.-.-.-.-.-
 - B. - - - - - - - -
 - C. - - . - - . - - . - - .
 - D. - - - - - - - -
00303. A Loran-C receiver in operation first receives pulses from the _____.
- A. slave station
 - B. master station
 - C. multiple stations
 - D. secondary stations
00304. In order to remove index error from a sextant, you should adjust the _____.
- A. index mirror to make it parallel to the horizon glass with the index set at zero
 - B. horizon glass to make it parallel to the index mirror with the index set at zero
 - C. horizon glass to make it parallel to the sextant frame
 - D. telescope to make it perpendicular to the sextant frame
00306. Weather conditions in the middle latitudes generally move _____.
- A. eastward
 - B. westward
 - C. northward
 - D. southward

00307. The time meridian that is used when computing the height of tide for Pensacola Bay, Florida, is _____.
- A. 60° W
 - B. 75° W
 - C. 90° W
 - D. 97.5° W
00308. The wind at Frying Pan shoals has been west-northwesterly at an average velocity of 40 knots. The predicted set and drift of the rotary current are 323° at 0.6 knot. What current should you expect?
- A. 001° at 0.7 knot
 - B. 018° at 0.4 knot
 - C. 052° at 0.6 knot
 - D. 089° at 0.9 knot
00309. You are underway on course 050° T and your maximum speed is 12 knots. The eye of a hurricane bears 120° T, 110 miles from your position. The hurricane is moving towards 285° T at 25 knots. What course should you steer at 12 knots to have the maximum CPA?
- A. 332°
 - B. 339°
 - C. 346°
 - D. 357°
00310. Which sextant in illustration D050NG has an index error of 3'30" off the arc?
- A. A
 - B. B
 - C. C
 - D. D
00311. You are steaming southward along the west coast of the United States when you encounter a buoy showing a flashing red light. The buoy should be left on _____.
- A. the vessel's starboard side
 - B. the vessel's port side
 - C. either side close aboard
 - D. either side well clear
00312. The depth of water on a chart is indicated as 23 meters. This is equal to _____.
- A. 11.5 fathoms
 - B. 12.6 fathoms
 - C. 69.0 feet
 - D. 78.6 feet
00313. The Loran-C receiver _____.
- A. is not bothered by interference
 - B. can be used at any distance with accuracy
 - C. can be bothered by interference
 - D. is reliable only from sunrise to sunset

00314. Which of these sextant errors is nonadjustable?
- A. Prismatic error
 - B. Graduation error
 - C. Centering error
 - D. All of the above
00315. Which statement about the time diagram in illustration DO08NG is TRUE?
- A. You are in west longitude.
 - B. Your date is ahead of Greenwich.
 - C. The meridian angle of the Sun is east.
 - D. The GHA of the Sun is less than 180° .
00316. According to Buys Ballot's law, when an observer in the Northern Hemisphere experiences a northwest wind, the center of low pressure is located to the _____.
- A. northeast
 - B. west-southwest
 - C. northwest
 - D. south-southeast
00317. The time meridian used for tide computations in New York Harbor is _____.
- A. $52^\circ 30'$ W
 - B. $60^\circ 00'$ W
 - C. $75^\circ 00'$ W
 - D. $82^\circ 30'$ W
00319. Illustration D042NG represents the symbols used by radiofacsimile weather charts. The symbol indicated at letter "F" represents a _____.
- A. maritime air mass
 - B. weather boundary
 - C. convergence zone
 - D. squall line
00320. Sometimes foreign charts are reproduced by DMA. On such a chart, a wire-dragged, swept area may be shown in green or _____.
- A. red
 - B. black
 - C. purple
 - D. yellow
00321. Which buoy may be even numbered?
- A. Mid-channel buoy
 - B. Unlighted nun buoy
 - C. Lighted green buoy
 - D. Any of the above
00322. The chart symbol indicating that the bottom is coral is _____.
- A. C
 - B. Cl
 - C. Co
 - D. c

00323. The position accuracy of Loran-C degrades with increasing distance from the transmitting stations as _____.
- A. gains are made over the signal path
 - B. a result of variation in propagation conditions
 - C. the frequency of the pulses increases
 - D. the stations shift pulses
00324. Index error of a sextant is primarily caused by _____.
- A. improperly correcting the other errors in a sextant
 - B. the horizon glass not being parallel to the horizon mirror
 - C. the horizon glass not being parallel to the index mirror
 - D. human error in taking a celestial observation
00325. What is the longitude of the geographical position of a body whose Greenwich hour angle is $210^{\circ}30'$?
- A. $30^{\circ}30'$ E
 - B. $59^{\circ}30'$ W
 - C. $120^{\circ}30'$ W
 - D. $149^{\circ}30'$ E
00326. You are steaming west in the North Atlantic in an extratropical cyclonic storm, and the wind is dead ahead. According to the law of Buys Ballot, the center of low pressure lies _____.
- A. to the north of you
 - B. to the south of you
 - C. ahead of you
 - D. astern of you
00327. When daylight savings time is kept the times of tide and current calculations must be adjusted. One way of doing this is to _____.
- A. subtract one hour from the times listed under the reference stations
 - B. add one hour to the times listed under the reference stations
 - C. apply no correction, as the times in the reference stations are adjusted for daylight savings time
 - D. add 15° to the standard meridian when calculating the time difference
00328. The direction of prevailing winds in the Northern hemisphere is caused by the _____.
- A. magnetic field at the North Pole
 - B. Gulf Stream
 - C. Earth's rotation
 - D. Arctic cold fronts
00329. Illustration D042NG represents the symbols used on radiofacsimile weather charts. Which of these symbols indicates a weather boundary?
- A. I
 - B. H
 - C. G
 - D. F

00331. Which of the following indicates a buoy that should be left to port when entering from seaward? (U.S. Aids to Navigation System)
- A. White light
 - B. Group flashing characteristic
 - C. Nun shape
 - D. Odd number
00332. Which chart symbol indicates the bottom is clay?
- A. Cly
 - B. Cla
 - C. Cl
 - D. C
00333. Loran-C stations transmit groups of pulses at specific times. The time interval between transmissions from the master station is the _____.
- A. coding delay
 - B. group repetition interval
 - C. pulse interval
 - D. phase code
00334. The index error is determined by adjusting the _____.
- A. sextant frame
 - B. horizontal glass
 - C. index mirror
 - D. micrometer drum
00335. What is the geographic longitude of a body whose GHA is 232°27'?
- A. 127°33' E
 - B. 52°27' E
 - C. 61°52' W
 - D. 61°52' E
00336. You are steaming eastward in the North Atlantic in an extratropical cyclonic storm and the wind is dead ahead. According to the law of Buys Ballot, the center of the low pressure lies _____.
- A. ahead of you
 - B. astern of you
 - C. to the north
 - D. to the south
00337. In order to predict the actual depth of water using the Tide Tables, the number obtained from the Tide Tables _____.
- A. is the actual depth
 - B. should be added to or subtracted from the charted depth
 - C. should be multiplied by the charted depth
 - D. should be divided by the charted depth
00338. Illustration D042NG represents the symbols used on radiofacsimile weather charts. The symbol indicated at letter "N" represents _____.
- A. hail
 - B. freezing rain
 - C. rain
 - D. snow

00339. The wind at Frying Pan shoals has been north-northeasterly at an average velocity of 30 knots. The predicted set and drift of the rotary current are 355° at 0.8 knot. What current should you expect?
- A. 010° at 1.1 knots
 - B. 047° at 0.3 knot
 - C. 325° at 0.7 knot
 - D. 279° at 1.0 knot
00341. Buoys which only mark the port or starboard side of the channel will never exhibit a light with which characteristic?
- A. Flashing
 - B. Quick flashing
 - C. Composite group flashing
 - D. Equal interval (isophase)
00342. A polyconic projection is based on a _____.
- A. plane tangent at one point
 - B. cylinder tangent at one parallel
 - C. cone tangent at one parallel
 - D. series of cones tangent at selected parallels
00343. Which system of navigation employs colors to designate slave stations?
- A. Consol
 - B. Omega
 - C. NAV SAT
 - D. Decca
00344. A marine sextant has the index arm set at zero and the reflected image of the horizon forms a continuous line with the actual image. When the sextant is rotated about the line of sight the images separate. The sextant has _____.
- A. error of perpendicularity
 - B. side error
 - C. prismatic error
 - D. centering error
00346. If your weather bulletin shows the center of a low pressure area to be 100 miles due east of your position, what winds can you expect in the Northern Hemisphere?
- A. East to northeast
 - B. East to southeast
 - C. North to northwest
 - D. South to southeast
00347. Illustration D042NG represents the symbols used on radiofacsimile weather charts. Which of these symbols indicates rain?
- A. N
 - B. M
 - C. I
 - D. G

00349. The direction of the southeast trade winds is a result of the _____.
- A. equatorial current
 - B. humidity
 - C. rotation of the earth
 - D. change of seasons
00350. When making landfall at night, the light from a powerful lighthouse may sometimes be seen before the lantern breaks the horizon. This light is called the _____.
- A. diffusion
 - B. backscatter
 - C. loom
 - D. elevation
00351. Which buoy may be odd numbered?
- A. A spherical buoy
 - B. An unlighted can buoy
 - C. A red buoy
 - D. A yellow buoy
00352. Which chart projection would be most suitable for marine surveying?
- A. Gnomonic
 - B. Lambert conformal
 - C. Mercator
 - D. Polyconic
00353. What is the basic principle on which the DECCA system operates?
- A. A hyperbolic system using phase comparison of the signals from the master and slave stations
 - B. A parabolic system using time differences of the signals from the master and slave stations
 - C. A rho-theta system producing bearing and distance from a station
 - D. A hyperbolic system using a combination of time differences and phase comparison
00354. In order to remove side error from a sextant, you should adjust the _____.
- A. horizon glass to make it parallel to the horizon mirror with the index set at zero
 - B. horizon glass to make it perpendicular to the index mirror with the index set at zero
 - C. horizon glass to make it perpendicular to the sextant frame
 - D. telescope to make it parallel to the sextant frame
00355. During the month of October the Sun's declination is _____.
- A. north and increasing
 - B. north and decreasing
 - C. south and increasing
 - D. south and decreasing

00356. When facing into the wind in the Northern Hemisphere the center of low pressure lies _____.
A. directly in front of you
B. directly behind you
C. to your left and behind you
D. to your right and behind you
00357. On 10 August 1983 you will dock near Days Point, Weehawken, on the Hudson River, at 1800 DST (ZD +4). The charted depth alongside the pier is 24 feet. What will be the depth of water when you dock?
A. 23.5 feet
B. 23.9 feet
C. 24.9 feet
D. 26.3 feet
00358. What will be the set of the rotary current at Nantucket Shoals at 1245 (ZD +5) 14 January 1983?
A. 015°
B. 125°
C. 162°
D. 225°
00359. You are enroute to assist vessel A. Vessel A is underway at 4.5 knots on course 233° T, and bears 264° T, 68 miles from you. What is the time to intercept if you make 13 Knots?
A. 6h 31m
B. 6h 47m
C. 7h 03m
D. 7h 34m
00360. Illustration D042NG represents the symbols used on radiofacsimile weather charts. The symbol indicated at letter "M" represents _____.
A. rain
B. snow
C. hail
D. ice
00361. As your vessel is heading southward along the east coast of the United States, you encounter a buoy showing a red flashing light. How should you pass this buoy?
A. Pass it about 50 yards off on either side
B. Leave it to your starboard
C. Leave it to your port
D. Pass it well clear on either side
00362. Which statement about a simple conic chart projection is TRUE?
A. It is an equal-area projection.
B. It is a conformal projection.
C. Meridians appear as curved lines.
D. The scale is correct along any meridian.

00363. Which statement about correcting OMEGA readings is TRUE?
- A. A diurnal correction is applied to the readout obtained from the receiver.
 - B. The readout must have propagation corrections applied.
 - C. The readout from the receiver is plotted directly without correction when ground waves are used.
 - D. Skywave corrections must be applied from sunset to sunrise.
00364. What causes the error of collimation with regards to the four adjustments to a sextant?
- A. Telescope not parallel to the frame
 - B. Personal error
 - C. The frame and index mirror not perpendicular
 - D. The frame and horizon glass not perpendicular
00365. The Sun at a maximum declination north would be approximately at _____.
- A. aphelion
 - B. perihelion
 - C. autumnal equinox
 - D. first point of Aries
00366. If an observer in the Northern Hemisphere faces the surface wind, the center of low pressure is towards his _____.
- A. left, slightly behind him
 - B. right, slightly behind him
 - C. left, slightly in front of him
 - D. right, slightly in front of him
00367. What will be the time after 0800 EST (ZD +5) that the height of the tide at South Freeport, ME, will be 6.0 feet on 7 November 1983?
- A. 0936
 - B. 0942
 - C. 0951
 - D. 1001
00368. A great circle crosses the equator at 134° E. It will also cross the equator at what other longitude?
- A. 46° W
 - B. 124° W
 - C. 134° W
 - D. 34° E
00369. You are underway on course 050° T and your maximum speed is 11 knots. The eye of a hurricane bears 070° T, 80 miles from your position. The hurricane is moving towards 270° T at 19 knots. What course should you steer at 11 knots to have the maximum CPA?
- A. 250°
 - B. 234°
 - C. 227°
 - D. 2152

00370. Prevailing winds between 30° N and 60° N latitude are from the _____.

- A. north
- B. south
- C. east
- D. west

00371. Which buoy may be odd numbered?

- A. Mid-channel buoy
- B. Unlighted nun buoy
- C. Lighted green buoy
- D. Any of the above

00372. You would find the variation on a polyconic projection chart _____.

- A. on the compass rose
- B. on the mileage scale
- C. written on the chart title
- D. at each line of longitude

00373. When you are using the "OMEGA" navigation system which statement about a line of position is TRUE?

- A. Each line number is unique to a line of position on a chart.
- B. It is a line within a given lane and can be ambiguous if the proper lane is not known.
- C. A master and single slave can be used to form a line of position.
- D. If six stations are received, three possible LOP's are available for a fix.

00374. There are seven sources of error in the marine sextant. Of the four errors listed, which one is adjustable?

- A. Error of collimation
- B. Prismatic error
- C. Graduation error
- D. Centering error

00375. If the Sun's observed altitude is 47°50', the zenith distance is _____.

- A. 42°10'
- B. 42°50'
- C. 47°50'
- D. 132°10'

00376. According to Buys Ballot's law, when an observer in the Northern Hemisphere experiences a northeast wind the center of low pressure is located to the _____.

- A. northeast
- B. west-southwest
- C. northwest
- D. south-southeast

00377. Determine the height of the tide at 2045 EST (ZD +5) at Augusta, ME, on 8 March 1983.
- A. 1.4 feet
 - B. 1.9 feet
 - C. 2.3 feet
 - D. 2.6 feet
00378. When fixing a vessel's position by radar, a navigator _____.
- A. should never use radar bearings
 - B. can use radar information from one object to fix the position
 - C. should only use radar bearings when the range exceeds the distance to the horizon
 - D. must use information from targets forward of the beam
00379. The steady current circling the globe at about 60' S is the _____.
- A. prevailing Westerly
 - B. Sub-Polar Flow
 - C. West Wind Drift
 - D. Circumpolar Flow
00380. Prevailing winds between 30° N and 60° N latitude are from the _____.
- A. east
 - B. west
 - C. north
 - D. south
00381. A nun buoy will _____.
- A. be green in color
 - B. have an even number
 - C. be left to port when entering from seaward
 - D. be cylindrical in shape
00382. Which of the following should be consulted to obtain information about the general current circulation in the North Atlantic Ocean?
- A. Pilot chart
 - B. Coast Pilot
 - C. Current Table
 - D. Climatological Atlas
00383. You are navigating using Omega when all power to the receiver is lost. After power is restored, you must _____.
- A. manually match the signal phases to initialize the set
 - B. tune the electronic signals to compensate for the propagation correction
 - C. set the readouts to match the readouts prior to the failure
 - D. determine the correct lane and reset the lane counter
00384. Which is a nonadjustable error of the sextant?
- A. Error of perpendicularity
 - B. Side error
 - C. Error of collimation
 - D. Centering error

00385. The difference of latitude (1) between the geographic position (GP) and your position, at the time of upper transit, is represented by _____.
- A. colatitude
 - B. codistance
 - C. zenith distance
 - D. altitude
00386. Your vessel is on course 180° T speed 22 knots. The apparent wind is from 70° off the port bow, speed 20 knots. The true direction and speed of the true wind are _____.
- A. 45° T, 21.0 knots
 - B. 51° T, 24.2 knots
 - C. 58° T, 21.2 knots
 - D. 64° T, 26.0 knots
00387. What is the height of tide at 1530 (ZD +3) on 9 June 1983, at the entrance to Rio Cunani, Brazil?
- A. 1.92 meters
 - B. 2.54 meters
 - C. 3.75 meters
 - D. 6.30 meters
00388. You are underway on course 120° T and your maximum speed is 12 knots. The eye of a hurricane bears 150° T, 120 miles from your position. The hurricane is moving towards 295° T at 20 knots. If you maneuver at 12 knots to avoid the hurricane, what could be the maximum CPA?
- A. 89 miles
 - B. 96 miles
 - C. 105 miles
 - D. 117 miles
00389. The edge of a hurricane has overtaken your vessel in the Gulf of Mexico, and the northwest wind of a few hours ago has shifted to the west. This is an indication that you are located in the _____.
- A. navigable semicircle
 - B. dangerous semicircle
 - C. low pressure area
 - D. eye of the storm
00390. During the winter months, the southeast trade winds are _____.
- A. stronger than during the summer months
 - B. weaker than during the summer months
 - C. drier than during the summer months
 - D. wetter than during the summer months
00391. When outbound from a U.S. port, a buoy displaying a flashing red light indicates _____.
- A. a junction with the preferred channel to the left
 - B. a sharp turn in the channel to the right
 - C. the port side of the channel
 - D. a wreck to be left on the vessel's starboard side

00392. A pilot chart does NOT contain information about _____.
A. average wind conditions
B. tidal currents
C. magnetic variation
D. average limits of field ice
00393. If your position is LAT 25° N, LONG 35° W, what is the correction you would apply to an RDF bearing received from a transmitting station in LAT 30° N, LONG 40° W?
A. -1.3°
B. +1.3°
C. -2.1°
D. +2.1°
00394. An instrument designed to maintain a continuous record of atmospheric pressure is a _____.
A. mercurial barometer
B. aneroid barometer
C. barograph
D. thermograph
00395. If the Sun's observed altitude is 27°12', the zenith distance is _____.
A. 62°48'
B. 27°12'
C. 152°48'
D. 43°12'
00396. Your vessel is on course 150° T, speed 17 knots. The apparent wind is from 40° off the starboard bow, speed 15 knots. What is the speed of the true wind?
A. 9.0 knots
B. 10.2 knots
C. 11.0 knots
D. 12.0 knots
00397. The mean tide level at Peaks Island, ME, is _____.
A. 1.8 feet
B. 2.5 feet
C. 3.2 feet
D. 4.5 feet
00398. The velocity of the apparent wind can be less than the true wind and from the same direction, if certain conditions are present. One condition is that the _____.
A. ship's speed is less than the true wind velocity
B. true wind is from dead astern
C. true wind is on the beam
D. true wind is from dead ahead

00401. You are steaming in a westerly direction along the Gulf Coast. You see ahead of you a lighted buoy showing a red isophase light. What action should you take?
- A. Alter course to port and leave the buoy to starboard
 - B. Alter course to starboard and leave the buoy to port
 - C. Alter course and leave the buoy near by on either side
 - D. Alter course and pass the buoy well-off on either side
00402. All of the following can be found on a Pilot Chart EXCEPT information concerning the _____.
- A. percentage of frequency of wave heights
 - B. visibility conditions
 - C. sea surface temperatures
 - D. amounts of precipitation
00403. Your position is LAT 20°00' N, LONG 45°00' W when you take a radio bearing on a ship in distress in LAT 15°00' N, LONG 40°00' W. Your RDF bearing corrected for calibration error is 135.6° T. What is the rhumb line course to rendezvous with the vessel in distress?
- A. 134.9° T
 - B. 135.6° T
 - C. 136.2° T
 - D. 136.9° T
00404. An aneroid barometer is an instrument _____.
- A. used to measure the speed of wind
 - B. in which the pressure of the air is measured
 - C. that tells which direction a storm is coming from
 - D. used to measure the height of waves
00405. At upper transit, if the zenith distance is 34°, the geographical distance from the observer to a body's GP is _____.
- A. 510 miles
 - B. 1220 miles
 - C. 2040 miles
 - D. 2260 miles
00406. Your vessel is on course 135° T speed 18 knots. From the appearance of the sea you estimate the speed of the true wind as 24.5 knots. The apparent wind is 40° on the starboard bow. Determine the speed of the apparent wind.
- A. 24.2 knots
 - B. 28.4 knots
 - C. 32.2 knots
 - D. 35.5 knots
00407. What would be the height of the tide at Crisfield, MD, at 0310 DST (ZD +4) on 6 May 1983?
- A. 0.1 foot
 - B. 0.5 foot
 - C. 1.1 feet
 - D. 1.6 feet

00408. A buoy bears 176° T at 3000 yards. What is the course to make good to leave the buoy 100 yards to port?
- A. 174° T
 - B. 176° T
 - C. 178° T
 - D. 180° T
00409. On November 1st the zone time is 1700 EST (ZD +5) in LONG 75° W. What is the corresponding zone time and date in LONG 135° E?
- A. 0700, November 2nd
 - B. 0700, November 1st
 - C. 2200, November 1st
 - D. 2200, October 31st
00410. The height of the tide at low water is 0.0 feet. The range is 9.0 feet. The duration is 06h 00m. The height of the tide 02h 12m before high water will be _____.
- A. 8.3 feet
 - B. 6.3 feet
 - C. 4.7 feet
 - D. 2.7 feet
00411. When entering from seaward, a buoy displaying a single-flashing red light would indicate _____.
- A. a junction with the preferred channel to the left
 - B. a sharp turn in the channel to the right
 - C. the starboard side of the channel
 - D. a wreck to be left on the vessel's port side
00412. If you were sailing in the North Pacific and were interested in the ice and iceberg limits, you could find this information in the _____.
- A. Pilot Chart
 - B. Coast Pilot
 - C. Notice to Mariners
 - D. None of the above
00413. You would need to apply the conversion angle to an RDF bearing, prior to plotting the bearing on a chart, when the ship and the station are both on _____.
- A. latitude 50° S, 200 miles apart
 - B. longitude 50° W, 150 miles apart
 - C. the equator, 175 miles apart
 - D. latitude 30° N, 50 miles apart
00414. The barometer is an instrument for measuring the _____.
- A. temperature
 - B. relative humidity
 - C. dew point
 - D. atmospheric pressure
00415. If the Sun's observed altitude is $54^{\circ}30'$, what is the zenith distance?
- A. $35^{\circ}30'$
 - B. $45^{\circ}30'$
 - C. $12^{\circ}30'$
 - D. $14^{\circ}30'$

00416. A ship is on course 195° at a speed of 15 knots. The apparent wind is from 40° on the port bow, speed 30 knots. The direction and speed of the true wind are _____.
- A. 068° T, 30 knots
 - B. 127° T, 21 knots
 - C. 263° T, 42 knots
 - D. 292° T, 42 knots
00417. On 6 July 1983, at 1830 DST (ZD +4), what will be the predicted height of tide at Newburgh, NY?
- A. 3.3 feet
 - B. 2.6 feet
 - C. 2.4 feet
 - D. 2.0 feet
00418. In most cases, the direction of the apparent wind lies between the bow and _____.
- A. the direction of the true wind
 - B. true north
 - C. the beam on the windward side
 - D. the beam on the lee side
00419. The ocean bottom that extends from the shoreline out to an area where there is a marked change in slope to a greater depth is the _____.
- A. abyssal plain
 - B. continental shelf
 - C. borderland
 - D. offshore terrace
00422. If you are sailing from the East Coast of the United States to the Caribbean Sea, which of the following publications would contain information on weather, currents, and storms?
- A. Sailing Charts of the Caribbean Sea
 - B. Pilot Charts of the North Atlantic
 - C. Light Lists, Atlantic and Gulf Coast
 - D. Tidal Current Tables
00423. You have calibrated your RDF. When compiling the calibration table, the correction to be applied to any future RDF bearings is listed against the _____.
- A. true bearing of the transmitter
 - B. relative bearing of the transmitter
 - C. heading of the vessel
 - D. time of reception
00424. For an accurate barometer check, you would _____.
- A. check it with a barometer on another vessel
 - B. take readings from several barometers and average them
 - C. check it with the barometer at the ship chandlery
 - D. check it against radio or Weather Bureau reports of the immediate vicinity

00425. $90^\circ - H_o =$ _____.
- A. sextant altitude
 - B. co-latitude
 - C. LHA
 - D. zenith distance
00426. The wind speed and direction observed from a moving vessel is known as _____.
- A. coordinate wind
 - B. true wind
 - C. apparent wind
 - D. anemometer wind
00427. On 23 March 1983, at Kingston Point, NY, what is the earliest time after 1700 EST (ZD +5) that the predicted tide will be +2.0 feet?
- A. 1730
 - B. 1800
 - C. 1856
 - D. 2030
00428. A buoy bears 178° T at 3000 yards. What is the course to make good to leave the buoy 100 yards to starboard?
- A. 174° T
 - B. 176° T
 - C. 178° T
 - D. 180° T
00429. A great circle crosses the equator at 127° W. It will also cross the equator at what other longitude?
- A. 127° E
 - B. 53° E
 - C. 27° E
 - D. 27° W
00430. The southeast trade winds actually blow toward the _____.
- A. southeast
 - B. south
 - C. east
 - D. northwest
00431. When a buoy marks a channel bifurcation, the preferred channel is NOT indicated by _____.
- A. the shape of an unlighted buoy
 - B. the light color of a lighted buoy
 - C. the color of the topmost band
 - D. whether the number is odd or even
00432. When using a Lambert conformal chart in high latitudes, angles such as bearings are measured in reference to _____.
- A. the meridian through the object of the bearing
 - B. the meridian through the ship's position
 - C. the meridian midway between the ship and the object
 - D. any meridian

00433. You are swinging ship to calibrate the RDF. The gyro error is 2° W. The RDF gyro bearing of a station is 308° at the same time the visual bearing is 307° . At the time of the bearing, you are heading 270° T. When you prepare the calibration chart, you would indicate the _____.
- A. correction is -1° when the relative bearing is 035°
 - B. error is -1° when the heading is 270°
 - C. correction is $+1^{\circ}$ when the relative bearing is 325°
 - D. error is -1° on all headings
00434. The purpose of the "set" hand on an aneroid barometer is to _____.
- A. adjust the barometer
 - B. indicate any change in the reading of the barometer
 - C. provide a correction for height above sea level
 - D. provide a correction for temperature changes
00435. If an observer is at 35° N latitude, his zenith is _____.
- A. 55° S of the celestial equator
 - B. at the north celestial pole
 - C. 35° N of the celestial equator
 - D. 55° N of the celestial equator
00436. A wind vane on a moving vessel shows _____.
- A. dead reckoning wind direction
 - B. true wind direction
 - C. apparent wind direction
 - D. estimated wind direction
00437. Your vessel will be docking at Chester, PA, during the evening of 22 April 1983. The chart shows a depth of 20 feet at the pier. What will be the depth of water available at 1856 EST (ZD +5)?
- A. 22.4 feet
 - B. 23.5 feet
 - C. 24.9 feet
 - D. 25.7 feet
00438. Your longitude is 124° E, and your local mean time is 0520 on the 5th of the month. The mean time and date at Greenwich is _____.
- A. 1336 on the 4th
 - B. 1336 on the 5th
 - C. 2104 on the 4th
 - D. 2104 on the 5th
00439. If a weather bulletin shows the center of a low pressure system to be 100 miles due east of you, what winds can you expect in the Southern Hemisphere?
- A. South-southwesterly
 - B. North-northwesterly
 - C. South-southeasterly
 - D. North-northeasterly
00441. A yellow buoy may exhibit a(n) _____.
- A. fixed red light
 - B. flashing light
 - C. white light
 - D. occulting light

00442. In very high latitudes, the most practical chart projection is the _____.
- A. Mercator
 - B. gnomonic
 - C. azimuthal
 - D. Lambert conformal
00443. You are swinging ship to calibrate the RDF. The RDF gyro bearing is 054° at the same time the visual bearing is 053° pgc. Gyro error is 1° W. At the time of the bearings the heading was 339° pgc. Which of the following statements about the calibrations are TRUE?
- A. 1° must be subtracted from all RDF bearings
 - B. 1° must be subtracted from all bearings when the ship is headed 339° T
 - C. 1° must be subtracted from all RDF bearings of 053° T
 - D. 1° must be subtracted from all RDF bearings of 075° relative
00444. A syphon cell is a part of a _____.
- A. maximum thermometer
 - B. barograph
 - C. thermograph
 - D. hygrometer
00445. The values of the Greenwich hour angle and declination, tabulated in all almanacs, are for the _____.
- A. upper limb of a celestial body
 - B. lower limb of a celestial body
 - C. centers of the various celestial bodies
 - D. lower limb of the Sun and Moon; center of the stars and planets
00446. The usual sequence of directions in which a tropical cyclone moves in the Southern Hemisphere is _____.
- A. northwest, west, and south
 - B. southwest, south and southeast
 - C. north, northwest and east
 - D. west, northwest and north
00447. On 27 April 1983, at 1105 DST (ZD +4), what will be the predicted height of tide at Falkner Island, CT?
- A. 5.2 feet
 - B. 5.6 feet
 - C. 6.2 feet
 - D. 6.8 feet
00448. Mean high water is the reference datum used to measure _____.
- A. soundings on the east coast of the United States
 - B. soundings in European waters
 - C. heights of topographical features in the United States
 - D. both heights and soundings worldwide

00449. You are enroute to assist vessel A. Vessel A is underway at 5 knots on course 063° T, and bears 136° T at 78 miles from you. What is the course to steer at 13 knots to intercept vessel A?
- A. 096°
 - B. 092°
 - C. 088°
 - D. 085°
00451. Which light characteristic can be used on a special purpose mark?
- A. Fixed
 - B. Occulting
 - C. Equal interval
 - D. Quick flashing
00452. When navigating in high latitudes and using a chart based on a Lambert conformal projection, _____.
- A. a straight line drawn on the chart approximates a great circle
 - B. the chart should not be used outside of the standard parallels
 - C. the course angle is measured at the mid-longitude of the track line
 - D. distance cannot be measured directly from the chart
00453. The quadrantal correction to be applied to an RDF bearing is determined _____.
- A. from Bowditch Vol. II
 - B. from a table on board your ship
 - C. by requesting the calibration station to provide the information after the RDF is calibrated
 - D. by comparing the true and relative bearings of the transmitter
00454. On what does the operation of an aneroid barometer depend?
- A. Thin, metal, air tight cell
 - B. Curved tube containing alcohol
 - C. Column of mercury supported by atmospheric pressure
 - D. Expansion of mercury in a closed tube
00455. The height of eye correction is smaller than geometrical dip because of _____.
- A. the angle between the horizontal and the line of sight to the visible horizon
 - B. index error
 - C. parallax
 - D. terrestrial refraction
00456. Which of the following conditions exists in the eye of a hurricane?
- A. Wind rapidly changing in direction
 - B. A temperature much lower than that outside the eye
 - C. Towering cumulonimbus clouds
 - D. An extremely low barometric pressure
00457. Find the height of the tide at Port Wentworth, GA, on 5 October 1983, at 1840 DST (ZD +4).
- A. 3.0 feet
 - B. 3.5 feet
 - C. 4.0 feet
 - D. 4.5 feet

00458. The prevailing westerlies of the Southern hemisphere blow 18-30 knots _____.
- A. all year long
 - B. during the summer months only
 - C. during the winter only
 - D. during spring only
00459. A buoy bears 178° T at 3000 yards. What is the course to make good to leave the buoy 100 yards to port?
- A. 174° T
 - B. 176° T
 - C. 178° T
 - D. 180° T
00460. When using horizontal sextant angles of three objects to fix your position, an indeterminate position will result in which of the following situations?
- A. The objects lie in a straight line.
 - B. The vessel is inside of a triangle formed by the objects.
 - C. The vessel is outside of a triangle formed by the objects.
 - D. A circle will pass through your position and the three objects.
00461. Under the U.S. Aids to Navigation System, a yellow buoy may _____.
- A. mark a fish net area
 - B. be lighted with a white light
 - C. show a fixed red light
 - D. Any of the above
00462. For what purpose would using a Lambert conformal chart be more convenient than using a Mercator?
- A. Plotting radio bearings over a long distance
 - B. Determining latitude and longitude of a fix
 - C. Measuring rhumb line distances
 - D. Measuring rhumb line directions
00463. The signal transmitted by a radio beacon station is referred to as its _____.
- A. group sequence
 - B. frequency
 - C. directional signal
 - D. characteristic signal
00464. Prior to reading an aneroid barometer, you should tap the face lightly with your finger to _____.
- A. expose any loose connections
 - B. demagnetize the metal elements
 - C. bring the pointer to its true position
 - D. contract and expand the glass face
00465. When applying a dip correction to the sighted sextant angle (hs), you always subtract the dip because you are correcting _____.
- A. hs to the visible horizon
 - B. hs to the sensible horizon
 - C. hs to the celestial horizon
 - D. Ho to the celestial horizon

00466. In the relatively calm area near the hurricane center, the seas are _____.
- A. moderate but easily navigated
 - B. calm
 - C. mountainous and confused
 - D. mountainous but fairly regular as far as direction is concerned
00467. At what time after 1400 EST (ZD +5), on 4 January 1983, will the height of the tide at Port Wentworth, GA, be 3.0 feet?
- A. 1612
 - B. 1630
 - C. 1653
 - D. 1718
00468. Which of the symbols in illustration D018NG represents a cold front?
- A. A
 - B. B
 - C. C
 - D. D
00469. Where are the prevailing westerlies of the Southern hemisphere located?
- A. Between the Equator and 10° latitude
 - B. Between 10° and 20° latitude
 - C. Between 30° and 60° latitude
 - D. Between 60° and 90° latitude
00470. You are underway on course 120° T and your maximum speed is 12 knots. The eye of a hurricane bears 150° T at 120 miles. The hurricane is moving towards 295° at 20 knots. What course should you steer at 12 knots to have the maximum CPA?
- A. 312°
 - B. 330°
 - C. 348°
 - D. 001°
00471. Yellow lights may appear on _____.
- A. special purpose buoys
 - B. vertically-striped buoys
 - C. horizontally-banded buoys
 - D. spherical buoys
00472. Which conic projection chart features straight lines which closely approximate a great circle?
- A. Polyconic
 - B. Lambert conformal
 - C. Orthographic
 - D. Stereographic
00473. The quadrantal error of a radio bearing is caused by _____.
- A. polarization at sunrise and sunset
 - B. not taking the bearing from the transmitting antenna
 - C. the signal passing over land before it reaches sea
 - D. the metal in a ship's structure

00474. Which of the following indications, afforded by the barometer, are most meaningful in forecasting weather?
- A. The words "Fair -- Change -- Rain"
 - B. The direction and rate of change of barometric pressure
 - C. The actual barometric pressure
 - D. The relative humidity
00475. A correction for augmentation is included in the Nautical Almanac corrections for _____.
- A. the Sun
 - B. the Moon
 - C. Venus
 - D. None of the above
00476. Tropical cyclones normally form within which of the following belts of latitude?
- A. 0° to 15°
 - B. 15° to 30°
 - C. 30° to 45°
 - D. 45° to 60°
00477. Determine the height of the tide at 1430 EST (ZD +5) at New Bedford, MA, on 10 April 1983.
- A. 1.1 feet
 - B. 1.2 feet
 - C. 1.5 feet
 - D. 1.7 feet
00478. The velocity of the apparent wind can be more than the true wind, and come from the same direction, if certain conditions are present. One condition is that the _____.
- A. ship's speed must be less than the true wind velocity
 - B. true wind must be from dead astern
 - C. true wind velocity must be faster than the ship's speed
 - D. true wind must be from dead ahead
00479. You are enroute to assist vessel A. Vessel A is underway at 5 knots on course 063° T, and bears 136° T at 78 miles from you. What is the course to steer at 13 knots to intercept vessel A?
- A. 114°
 - B. 158°
 - C. 295°
 - D. 340°
00480. What kind of pressure systems travel in tropical waves?
- A. High pressure
 - B. Low pressure
 - C. Subsurface pressure
 - D. Terrastatic pressure
00481. A special mark (yellow buoy), if lighted, may exhibit which light rhythm?
- A. Flashing
 - B. Morse "A"
 - C. Equal interval
 - D. Occulting

00482. Which statement about a gnomonic chart is correct?
- A. A rhumb line appears as a straight line.
 - B. Distance is measured at the midlatitude of the track line.
 - C. Meridians appear as curved lines converging toward the nearer pole.
 - D. Parallels, except the equator, appear as curved lines.
00483. Coral atolls, or a chain of islands at right angles to the radar beam, may show as a long line rather than as individual targets due to _____.
- A. the effects of beam width
 - B. limitations on range resolution
 - C. the pulse length of the radar
 - D. the multiple-target resolution factor
00484. The needle of an aneroid barometer points to 30.05 on the dial. This indicates that the barometric pressure is _____.
- A. 30.05 inches of mercury
 - B. 30.05 millimeters of mercury
 - C. 30.05 millibars
 - D. falling
00485. A phase correction is applied to observations of _____.
- A. the Sun
 - B. stars
 - C. planets
 - D. All of the above
00486. Tropical cyclones do not form within 5° of the Equator because _____.
- A. there are no fronts in that area
 - B. it is too hot
 - C. it is too humid
 - D. of negligible Coriolis force
00487. What will be the time after 0600 (ZD +3), on 6 March 1983, that the height of the tide at Puerto Rosales, Argentina, will be 9.0 feet?
- A. 0740
 - B. 0754
 - C. 0840
 - D. 0922
00488. A great circle crosses the equator at 93° W. It will also cross the equator at what other longitude?
- A. 13° E
 - B. 87° E
 - C. 177° E
 - D. 177° W

00489. You are anchored in the Aleutian Island chain and receive word that a tsunami is expected to strike the islands in six hours. What is the safest action?
- A. Get underway and be in deep, open-ocean water when the tsunami arrives.
 - B. Increase the scope of the anchor cable and drop the second anchor underfoot at short stay.
 - C. Get underway and be close inshore on the side of the island away from the tsunami.
 - D. Plant both anchors with about a 60° angle between them, and let out a long scope to each anchor.
00490. You are underway on course 050° T and your maximum speed is 10 knots. The eye of a hurricane bears 100° T, 90 miles from your position. The hurricane is moving towards 285° T at 19 knots. What course should you steer at 10 knots to have the maximum CPA?
- A. 221°
 - B. 226°
 - C. 233°
 - D. 238°
00491. A special purpose buoy shall be _____.
- A. lighted with a white light
 - B. striped black and red
 - C. lighted with a red light
 - D. yellow
00492. What type of projection is formed if a plane is tangent to the Earth, and points are projected geometrically from the center of the Earth?
- A. Lambert conformal
 - B. Oblique gnomonic
 - C. Mercator
 - D. Transverse conic
00493. The pictures shown in illustration D011NG represent the geographic location of a vessel and the radar presentation at the same time. Which of the following statements is TRUE?
- A. Ship No. 1 is not detected due to the shadow effect of the headland.
 - B. The small island is not detected due to the effect of beam width.
 - C. A tangent bearing of the headland to the south-southeast should be corrected by adding one-half of the beam width.
 - D. Ship No. 2 is not detected due to the reflective mass of the background mountain overpowering the ship's reflective signals.
00494. Barometers are usually calibrated to indicate atmospheric pressure in _____.
- A. inches of mercury and centimeters
 - B. feet of mercury and millibars
 - C. inches of mercury and millimeters
 - D. inches of mercury and millibars
00495. A semidiameter correction is applied to observations of _____.
- A. Mars
 - B. the Moon
 - C. Jupiter
 - D. All of the above

00496. Severe tropical cyclones (hurricanes, typhoons) occur in all warm-water oceans except the _____.
- A. Indian Ocean
 - B. North Pacific Ocean
 - C. South Pacific Ocean
 - D. South Atlantic Ocean
00497. What will be the time after 0300 (ZD +4), on 5 March 1983, when the height of the tide at Port of Spain, Trinidad, will be 2.5 feet?
- A. 0548
 - B. 0602
 - C. 0618
 - D. 0634
00498. What is an advantage of the magnetic compass aboard vessels?
- A. Compass error is negligible at or near the earth's magnetic poles.
 - B. It does not have to be checked as often.
 - C. It is reliable due to its essential simplicity.
 - D. All points on the compass rose are readily visible.
00499. Which of the symbols in illustration D018NG represents an occluded front?
- A. A
 - B. B
 - C. C
 - D. D
00500. The Defense Mapping Agency would produce a chart of the coast of _____.
- A. Alaska
 - B. Canada
 - C. Puerto Rico
 - D. Hawaii
00501. Which of the buoys listed below could be used to mark an anchorage?
- A. White buoy numbered "3"
 - B. White buoy with a green top
 - C. White buoy with orange bands
 - D. Yellow buoy lettered "N"
00502. A gnomonic projection is based on a(n) _____.
- A. plane tangent at one point
 - B. cylinder tangent at the equator
 - C. cone tangent at one parallel
 - D. infinite series of cones tangent at selected parallels
00503. You are approaching a light fitted with a RACON. The light may be identified on the radar by _____.
- A. a dashed line running from the center of the scope to the light
 - B. an audible signal when the sweep crosses the light
 - C. a circle appearing on the scope surrounding the light
 - D. a coded signal appearing on the same bearing at a greater range than the light

00504. Barometer readings in weather reports are given in terms of pressure at _____.
- A. sea level
 - B. Washington, D.C.
 - C. the weather station
 - D. the broadcasting station
00505. The error in the measurement of the altitude of a celestial body, caused by refraction, increases as the _____.
- A. horizontal parallax decreases
 - B. observer's height above sea level increases
 - C. humidity of the atmosphere decreases
 - D. altitude of the body decreases
00506. You are to sail from Elizabethport, N.J., on 22 May 1983, with a maximum draft of 28 feet. You will pass over an obstruction in the channel near Sandy Hook that has a depth of 26.5 feet. The steaming time from Elizabethport to the obstruction is 1h 40m. What is the earliest time (ZD + 4) you can sail on the afternoon of 22 May and pass over the obstruction with 2 feet of clearance?
- A. 1454
 - B. 1424
 - C. 1405
 - D. 1329
00507. What will be the time after 1000 EST (ZD +5), on 4 March 1983, that the height of the tide at City Island, NY, will be 2.4 feet?
- A. 1228
 - B. 1240
 - C. 1244
 - D. 1248
00509. A line of position derived by radar range from an undetermined point on a coast will be a _____.
- A. straight line
 - B. arc
 - C. parabola
 - D. line parallel to the coast
00511. A survey (special purpose mark) buoy _____.
- A. must be lighted
 - B. may have a flashing red light
 - C. may have a fixed white light
 - D. None of the above
00512. On a gnomonic chart, a great circle track between Los Angeles and Brisbane will appear as a _____.
- A. loxodromic curve
 - B. curved line concave to the equator
 - C. straight line
 - D. spiral approaching the poles as a limit

00513. You are radar scanning for a buoy fitted with a racon. Which radar screen in illustration D017NG represents the presentation you should expect on the PPI?
- A. A
 - B. B
 - C. C
 - D. D
00514. What instrument measures wind velocity?
- A. Hydrometer
 - B. Barometer
 - C. Psychrometer
 - D. Anemometer
00515. The small circle of the celestial sphere parallel to the celestial equator, and transcribed by the daily motion of the body, is called the _____.
- A. hour circle of the body
 - B. parallel of declination
 - C. vertical circle of the body
 - D. parallel of altitude
00516. A hurricane moving northeast out of the Gulf passes west of your position. You could expect all of the following EXCEPT _____.
- A. higher than normal tides
 - B. high winds
 - C. winds veering from south, through west, to northwest
 - D. light showers
00517. On 5 March 1983, at 0630 EST (ZD +5), what will be the predicted height of tide at Ocracoke, Ocracoke Inlet, NC?
- A. 0.1 foot
 - B. 1.2 feet
 - C. 1.9 feet
 - D. 2.3 feet
00518. The apparent wind's speed and the true wind's speed will be equal when _____.
- A. the true wind is dead ahead
 - B. the true wind is dead astern
 - C. the true wind's speed is equal to ship's speed
 - D. the true wind's speed is zero
00519. The chart of a beach area shows a very flat slope to the underwater beach bottom. What type of breakers can be expected when trying to land a boat on this beach?
- A. Surging
 - B. Spilling
 - C. Plunging
 - D. Converging

00521. Which sextant in illustration D050NG has an index error of 2'10" on the arc?
- A. A
 - B. B
 - C. C
 - D. D
00522. All straight lines represent great circle tracks on a chart based on a(n) _____.
- A. Mercator projection
 - B. polyconic projection
 - C. orthographic projection
 - D. gnomonic projection
00523. A radar display in which North is always at the top of the screen is a(n) _____.
- A. unstabilized display
 - B. stabilized display
 - C. composition display
 - D. relative display
00524. An anemometer on a moving vessel measures _____.
- A. apparent wind speed only
 - B. true wind speed and true wind direction
 - C. true wind speed only
 - D. apparent wind speed and true wind direction
00525. In the celestial equator system of coordinates, what is comparable to latitude on the terrestrial sphere?
- A. Altitude
 - B. Right ascension
 - C. Celestial meridians
 - D. Declination
00526. When a hurricane passes over colder water or land and loses the source of heat, the storm assumes the characteristics of a(n) _____.
- A. high pressure area
 - B. extratropical cyclone
 - C. tropical storm
 - D. easterly wave
00527. On 6 December 1983, at 1719 EST (ZD +5), what will be the predicted height of tide at Chester, PA?
- A. 0.8 foot
 - B. 2.4 feet
 - C. 3.5 feet
 - D. 6.0 feet
00528. Which of the following should you expect when you encounter a tsunami in the open ocean?
- A. Violent seas from mixed directions
 - B. No noticeable change from the existing sea state
 - C. Winds increasing to gale force from the northwest in the Northern Hemisphere
 - D. A major wave of extreme height and length

00529. In some river mouths and estuaries the incoming high-tide wave crest overtakes the preceding low-tide trough. This results in a wall of water proceeding upstream, and is called a _____.
- A. seiche
 - B. bore
 - C. boundary wave
 - D. surge
00531. You have been informed that dredging operations may be underway in your vicinity. Which of the following buoys would indicate the area?
- A. White buoy with a green top
 - B. White and international orange buoy
 - C. Yellow buoy
 - D. Yellow and black vertically-striped buoy
00533. You are using a radar in which your own ship is shown at the center, and the heading flash always points to 0°. If bearings are measured in relation to the flash, what type of bearings are produced?
- A. Relative
 - B. True
 - C. Compass
 - D. Magnetic
00534. Which of the following is TRUE concerning an anemometer on a moving vessel?
- A. It measures true wind speed.
 - B. It measures true wind speed and true wind direction.
 - C. It measures apparent wind speed.
 - D. It measures apparent wind speed and true wind direction.
00535. The tropical year differs from which year by 20 minutes?
- A. Astronomical year
 - B. Natural year
 - C. Equinoctial year
 - D. Sidereal year
00536. You are enroute from Puerto Rico to New York. A hurricane makes up and is approaching. If the wind veers steadily, this indicates that your vessel is _____.
- A. in the dangerous semicircle
 - B. in the navigable semicircle
 - C. directly in the path of the storm
 - D. in the storm center
00537. What will be the height of tide at Gargathy Neck, VA, at 1800 DST (ZD +4), on 16 August 1983?
- A. 2.3 feet
 - B. 2.9 feet
 - C. 3.3 feet
 - D. 3.6 feet

00538. Which of the symbols in illustration D018NG represents a stationary front?
- A. A
 - B. B
 - C. C
 - D. D
00539. You are underway on course 050° T and your maximum speed is 13 knots. The eye of a hurricane bears 120° T, 100 miles from your position. The hurricane is moving towards 265° T at 25 knots. What course should you steer at 13 knots to have the maximum CPA?
- A. 324° T
 - B. 306° T
 - C. 299° T
 - D. 276° T
00541. A yellow buoy may mark _____.
- A. a wreck
 - B. a shoal area
 - C. an anchorage area
 - D. a middle ground
00542. The only cylindrical projection widely used for chart navigation is the _____.
- A. Lambert conformal
 - B. Mercator
 - C. azimuthal
 - D. gnomonic
00543. A radar display in which the orientation of the display is fixed, so that the north is always at the top of the screen, is called a(n) _____.
- A. relative display
 - B. composite display
 - C. stabilized display
 - D. unstabilized display
00544. The instrument most commonly used to gather the data for determining the relative humidity is the _____.
- A. hydrometer
 - B. psychrometer
 - C. barometer
 - D. anemometer
00545. The arc of a great circle which passes through the body and celestial poles is part of the _____. (See illustration D007NG)
- A. hour circle
 - B. diurnal circle
 - C. observer's meridian
 - D. altitude circle

00546. If it is impossible to avoid a hurricane in the Northern Hemisphere, the most favorable place to be when the storm passes is in _____.
A. the dangerous semicircle
B. the eye (center) of the storm
C. that half of the storm lying to the right of the storm's path
D. that half of the storm lying to the left of the storm's path
00547. On 2 November 1983, at 1630 EST (ZD +5), what will be the predicted height of tide at Fulton, FL?
A. 2.8 feet
B. 3.4 feet
C. 4.2 feet
D. 5.6 feet
00549. On a working copy of a weather map, an occluded front is represented by what color line?
A. Red
B. Blue
C. Alternating red and blue
D. Purple
00551. Spoil grounds, anchorage areas, cable areas, and military exercise areas are all marked by yellow buoys. What special mark on the buoy will indicate the specific area you are in?
A. A topmark triangular in shape
B. A topmark spherical in shape
C. Lettering on the buoy
D. A topmark consisting of two cones with the points up
00552. A Mercator chart is a _____.
A. cylindrical projection
B. simple conic projection
C. polyconic projection
D. rectangular projection
00553. The beam width of your radar is 2°. The left tangent bearing of a small island, as observed on the PPI scope, is 056° pgc. If the gyro error is 2° E, what bearing would you plot on the chart?
A. 052°
B. 056°
C. 059°
D. 060°
00554. A sling psychrometer is a(n) _____.
A. type of cargo gear
B. instrument used in celestial navigation
C. instrument used to measure temperatures
D. instrument used to measure specific gravity
00555. The letter D in illustration D006NG represents the _____.
A. geoidal horizon
B. celestial horizon
C. visible horizon
D. geometrical horizon

00556. In a tropical cyclone in the Northern Hemisphere, a vessel hove to with the wind shifting counterclockwise would be _____.
- A. in the navigable semicircle
 - B. in the dangerous semicircle
 - C. directly in the path of the center
 - D. ahead of the storm
00557. Your vessel has a draft of 23 feet. On 23 June 1983 you wish to pass over a temporary obstruction near Beaufort, SC, that has a charted depth of 22 feet. Allowing for a safety margin of 3 feet, what is the earliest time after 1600 DST (ZD +4) that this passage can be made?
- A. 1751
 - B. 1815
 - C. 1855
 - D. 1944
00558. A buoy bears 176° T at 3000 yards. What is the course to make good to leave the buoy 100 yards to starboard?
- A. 174° T
 - B. 176° T
 - C. 178° T
 - D. 180° T
00559. A great circle crosses the equator at 162° E. It will also cross the equator at what other longitude?
- A. 62° E
 - B. 126° W
 - C. 162° W
 - D. 18° W
00560. On 14 April 1981, a back sight is taken of the upper limb of the Sun as seen in the telescope. The height of eye is 45 feet. The index error is 2.5' on the arc. The sextant altitude (hs) is 117°14.6'. What is the observed altitude (Ho)?
- A. 63°01.9'
 - B. 63°03.4'
 - C. 63°07.4'
 - D. 63°09.9'
00561. Buoys which mark dredging areas are painted _____.
- A. black
 - B. yellow
 - C. green
 - D. red
00562. You wish to measure the distance on a Mercator chart between a point in latitude 42°30' N and a point in latitude 40°30' N. To measure 30 miles at a time you should set the points of the dividers at _____.
- A. 41°15' and 41°45'
 - B. 41°45' and 42°15'
 - C. 42°15' and 42°45'
 - D. 42°00' and 42°30'

00563. Your radar has a beam width of 2° . The radar gyro bearing of the right tangent of an island is 316° . The gyro error is 1° E. What true bearing should be plotted on the chart?
- A. 313°
 - B. 314°
 - C. 316°
 - D. 317°
00564. A hygrometer is a device used for determining _____.
- A. the absolute temperature
 - B. atmospheric pressure
 - C. wind velocity
 - D. relative humidity
00565. The letter B in illustration D006NG represents the _____.
- A. geoidal horizon
 - B. celestial horizon
 - C. visible horizon
 - D. sensible horizon
00566. You are attempting to locate your position with reference to a hurricane center in the Northern Hemisphere. If the wind direction remains steady, but with diminishing velocity, you are most likely _____.
- A. in the right semicircle
 - B. in the left semicircle
 - C. on the storm track ahead of the center
 - D. on the storm track behind the center
00567. The charted channel depth at Eastport, ME, is 28 feet. You are drawing 31.5 feet and wish 2 feet clearance under the keel. What is the earliest time after 1700 DST (ZD +4), on 6 September 1983, that you can enter the channel?
- A. 1803
 - B. 1842
 - C. 1905
 - D. 1916
00568. The chart of a beach area shows a very steep slope to the underwater beach bottom. What type of breakers can be expected when trying to land a boat on this beach?
- A. Surging
 - B. Converging
 - C. Spilling
 - D. Plunging
00569. A line of position formed by sighting two charted objects in line is called a(n) _____.
- A. relative bearing
 - B. range line
 - C. track line
 - D. estimated position

00571. The Coast Guard Captain of the Port has excluded all traffic from a section of a port, while a regatta is taking place. The buoys marking this exclusion area will be _____.
- A. nun or can-shaped to conform to the overall direction of navigation
 - B. yellow
 - C. orange and white
 - D. marked with a spherical topmark
00572. You wish to measure the distance on a Mercator chart between a point in latitude $43^{\circ}30'$ N and a point in latitude $40^{\circ}30'$ N. To measure 30 miles at a time, you should set the points of the dividers at _____.
- A. $41^{\circ}30'$ and $42^{\circ}00'$
 - B. $41^{\circ}45'$ and $42^{\circ}15'$
 - C. $42^{\circ}00'$ and $42^{\circ}30'$
 - D. $42^{\circ}15'$ and $42^{\circ}45'$
00573. What is the name of the movable, radial guide line used to measure direction on a radar?
- A. Compass rose
 - B. Cursor
 - C. Plan position indicator
 - D. Variable range marker
00574. If your mercurial barometer reads 30.50 inches and the temperature is 56° F, what is the correct reading at 55° N, 150° W?
- A. 30.42
 - B. 30.45
 - C. 30.50
 - D. 30.53
00575. The horizontal plane, perpendicular to the zenith-nadir axis, that intersects with the celestial sphere and is tangent to the earth is called the _____.
- A. celestial horizon
 - B. sensible horizon
 - C. visible horizon
 - D. geoidal horizon
00576. In a tropical cyclone in the Southern Hemisphere, a vessel hove to with the wind shifting clockwise would be _____.
- A. ahead of the storm center
 - B. in the dangerous semicircle
 - C. directly behind the storm center
 - D. in the navigable semicircle
00577. Your vessel has a draft of 24 feet. On 7 April 1983 you wish to pass over a temporary obstruction near Lovell, MA, that has a charted depth of 22 feet. Allowing for a safety margin of 3.1 feet, what is the earliest time after 0100 EST (ZD +5) that this passage can be made?
- A. 0248
 - B. 0304
 - C. 0334
 - D. 0356

00578. At about GMT 1436, on 3 December 1981, the lower limb of the Moon is observed with a sextant having an index error of 2.5' on the arc. The height of eye is 32 feet. The sextant altitude (hs) is 3°38.8'. What is the observed altitude?
- A. Ho 4°18.6'
 - B. Ho 4°29.1'
 - C. Ho 4°36.3'
 - D. Ho 4°42.2'
00579. Low pressure disturbances, which travel along the intertropical convergence zone, are called _____.
- A. permanent waves
 - B. tidal waves
 - C. tropical waves
 - D. tropical storms
00580. On 21 January 1981, you take a back sight of the Sun's upper limb as it appears in the scope. The sextant altitude (hs) is 121°31.5'. The index error is 2.5' on the arc. The height of eye is 45 feet. What is the observed altitude (Ho)?
- A. 31°06.2'
 - B. 58°53.1'
 - C. 58°12.2'
 - D. 58°03.2'
00581. The Captain of the Port has closed to navigation, and buoyed, a section of a harbor. These buoys would be painted _____.
- A. red or green to conform with the other lateral aids
 - B. red and green horizontally-striped
 - C. solid yellow
 - D. white with orange marks
00582. Distance along a track line is measured on a Mercator chart by using the _____.
- A. latitude scale near the middle of the track line
 - B. longitude scale near the middle of the track line
 - C. latitude scale at the midlatitude of the chart
 - D. latitude or longitude scale at the middle of the scale
00583. The radar control used to reduce sea return at close ranges is the _____.
- A. gain control
 - B. sensitivity time control
 - C. fast time constant
 - D. pulse length control
00584. The correction(s) which must be applied to an aneroid barometer reading include(s) _____.
- A. height error
 - B. gravity error
 - C. temperature error
 - D. All of the above

00585. What great circle is always needed to form the astronomical triangle?
- A. Celestial equator
 - B. Principal vertical circle
 - C. Celestial meridian
 - D. Prime vertical circle
00586. The approximate distance to a storm center can be determined by noting the hourly rate of fall of the barometer. If the rate of fall is 0.08 - 0.12 inches, what is the approximate distance to the storm center?
- A. 50 to 80 miles
 - B. 80 to 100 miles
 - C. 100 to 150 miles
 - D. 150 to 250 miles
00587. Your vessel has a draft of 34 feet. On 8 October 1983 you wish to pass over an obstruction near Jaffrey Point, NH, that has a charted depth of 31 feet. Allowing for a safety margin of 3 feet, what is the earliest time after 0900 DST (ZD +4) that this passage can be made?
- A. 0920
 - B. 1028
 - C. 1120
 - D. 1159
00588. You are underway on course 050° T and your maximum speed is 10 knots. The eye of a hurricane bears 100° T, 90 miles from your position. The hurricane is moving towards 285° T at 19 knots. If you maneuver at 10 knots to avoid the hurricane, what could be the maximum CPA?
- A. 39 miles
 - B. 45 miles
 - C. 53 miles
 - D. 59 miles
00589. What is the index error of sextant D in illustration D050NG?
- A. 7'10" on the arc
 - B. 6'50" on the arc
 - C. 3'00" on the arc
 - D. 2'10" on the arc
00590. On 16 January 1981, you take a sight of a star. The sextant altitude (hs) is 4°33.0'. The temperature is -10°C, and the barometer reads 992 millibars. The height of eye is 42 feet. The index error is 1.9' off the arc. What is the observed altitude (Ho)?
- A. 4°10.2'
 - B. 4°14.3'
 - C. 4°17.0'
 - D. 4°24.1'
00591. White lights may be found on _____.
- A. special purpose buoys
 - B. spherical buoys
 - C. information and regulatory buoys
 - D. numbered buoys

00592. To measure distance on a Mercator chart between the parallels of LAT 34°30' N and LAT 31°30' N, which 30 mile scale should be used?
- A. 33°00' to 33°30'
 - B. 32°30' to 33°00'
 - C. 32°45' to 33°15'
 - D. 32°15' to 32°45'
00593. Radar makes the most accurate determination of the ____.
- A. direction of a target
 - B. distance to a target
 - C. size of a target
 - D. shape of a target
00594. Barometers are calibrated at a standard temperature of ____.
- A. 0° F
 - B. 32° F
 - C. 60° F
 - D. 70° F
00595. In the navigational triangle, the angle at the elevated pole is the ____.
- A. meridian angle
 - B. altitude
 - C. right ascension
 - D. azimuth angle
00596. Which condition would NOT indicate the approach of a tropical storm?
- A. Long, high swells
 - B. Cirrus clouds
 - C. Halos about the Sun or Moon
 - D. Decrease in wind velocity
00597. You will be loading in Boston Harbor to a maximum draft of 32'06". The charted depth of an obstruction in the channel near Boston Light is 30 feet and you wish to have 3 feet of keel clearance. The steaming time from the pier to the obstruction is 01h 05m. What is the latest time (ZD +4) you can sail on 17 May 1983 and meet these requirements?
- A. 1610
 - B. 1726
 - C. 1821
 - D. 2350
00598. A great circle crosses the equator at 141° E. It will also cross the equator at what other longitude?
- A. 180° E
 - B. 41° E
 - C. 141° W
 - D. 39° W
00599. Magnetic compass deviation ____.
- A. varies depending upon the bearing used
 - B. is the angular difference between magnetic north and compass north
 - C. is published on the compass rose on most nautical charts
 - D. is the angular difference between geographic and magnetic meridians

00600. The dangerous semicircle of a typhoon in the Southern Hemisphere is that area _____.
- A. measured from due south clockwise 180°
 - B. measured from due south counterclockwise 180°
 - C. to the left of the storm's track
 - D. ahead of the typhoon measured from the storm's track to 90° on each side
00601. White and orange buoys, if lighted, shall show which color of light?
- A. White
 - B. Orange
 - C. Red
 - D. Alternating yellow and white
00602. Between the equator and the 46th parallel of latitude, there are 3099 meridional parts. How many degrees of equatorial longitude does 3099 meridional parts represent?
- A. 35°52'45"
 - B. 51°39'00"
 - C. 74°21'11"
 - D. 82°36'12"
00603. What is the approximate wave length of an X Band Radar operating on a frequency of approximately 9500 MHz?
- A. 3 cm
 - B. 10 cm
 - C. 30 cm
 - D. 100 cm
00604. Chronometer error may be found by _____.
- A. radio time signal
 - B. comparison with a timepiece of known error
 - C. applying the prevailing chronometer rate to previous readings
 - D. Any of the above
00605. Which is NOT a side of the celestial navigational triangle?
- A. Co-latitude
 - B. Zenith distance
 - C. Altitude
 - D. Co-declination
00606. Early indications of the approach of a hurricane may be all of the following EXCEPT _____.
- A. short confused swells
 - B. gradually increasing white clouds (mare's tails)
 - C. pumping barometer
 - D. continuous fine mist-like rain

00607. The charted depth alongside the south face of Mystic Pier, Charlestown, MA, is 35 feet. Your maximum draft is 38 feet. You wish to have 2 feet under the bottom, on a rising tide, when you go alongside to discharge a heavy lift. What is the earliest time after 0900 EST (ZD +5), on 2 February 1983, that you can dock?
- A. 1020
 - B. 1050
 - C. 1130
 - D. 1150
00608. In which of the following voyages, between two points, is the rhumb line distance NOT approximately the same as the great circle distance?
- A. The two points are in low latitudes in the same hemisphere.
 - B. The two points are in high latitudes in the same hemisphere.
 - C. The two points are near the equator, but in different hemispheres.
 - D. One point is near the equator, and one point is in high latitudes, and both are near the 180th meridian.
00609. A tropical wave is located 200 miles due west of your position, which is north of the equator. Where will the wave be in 24 hours?
- A. Farther away to the west
 - B. Farther away to the east
 - C. In the same place
 - D. Closer and to the west
00610. The apparent wind's speed can be zero only when two conditions are present. One condition is that the true wind _____.
- A. must be from dead ahead
 - B. speed must be zero
 - C. must be from dead astern
 - D. must be on the beam
00611. Information markers, when lighted, will display _____.
- A. yellow lights
 - B. green lights
 - C. white lights
 - D. red lights
00612. Which statement is TRUE concerning a Mercator projection?
- A. Degrees of longitude decrease in length as latitude increases.
 - B. The length of the meridians is increased to provide for equal expansion in all directions.
 - C. The mileage between the meridians is increased as the latitude increases.
 - D. All of the above
00613. Your radar indicates a target; however, there is no visible object at the point indicated. A large mountain, approximately 50 miles away on the same bearing as the target, is breaking the horizon. You should suspect the radar target is caused by _____.
- A. a submerged submarine
 - B. ducting
 - C. sub-refraction
 - D. ionospheric skip waves

00614. A marine chronometer should be rewound once every _____.
A. 12 hours
B. day
C. 3 days
D. week
00615. The spinning motion of a planet around its axis is called _____.
A. revolution
B. rotation
C. orbit
D. space motion
00616. Which of the following indicates that a tropical cyclone can be expected at your position within 24 to 48 hours?
A. A daily fluctuation of over 6 millibars in the barometric reading
B. A sudden wind shift from southwest to northwest followed by steadily increasing winds
C. The normal swell pattern becoming confused, with the length of the swell increasing
D. An overcast sky with steadily increasing rain from nimbostratus clouds
00617. You are bound for the Chelsea docks in the Hudson River. The captain wants to arrive at the docks at the first slack water on 28 July 1983. You are keeping daylight saving time. What time should you be at the docks?
A. 0215
B. 0530
C. 0811
D. 0911
00618. What is the mark on a lead line indicating 13 fathoms?
A. White linen rag
B. Red woolen rag
C. Three knots
D. Three strips of leather
00619. According to Buys Ballot's Law, when an observer in the Southern Hemisphere experiences a northwest wind, the center of the low pressure is located to the _____.
A. east-northeast
B. south-southwest
C. east-southeast
D. west-southwest
00621. Navigational marks used for informational or regulatory purposes are _____.
A. solid yellow
B. white with orange geometric shapes
C. red and white vertically-striped
D. green and red horizontally-banded

00622. The scale of a Mercator projection is 4 inches equals 1° LONG. What is the expansion in inches between the 60th and 61st parallels?
- A. 8.11 inches
 - B. 7.70 inches
 - C. 7.48 inches
 - D. 6.98 inches
00623. An indirect radar echo is caused by a reflection of the main lobe of the radar beam off the observer's vessel. Which of the following is NOT a characteristic of indirect echoes?
- A. Their bearing is almost constant, even when the true bearing of the contact changes appreciably.
 - B. They always appear on a bearing of 90° from the true bearing of the contact.
 - C. The indirect echoes usually appear in shadow sectors.
 - D. When plotted, their movements are usually abnormal.
00624. When using a mechanical (windup type) marine chronometer, how often should it be reset?
- A. Only when it is overhauled
 - B. Whenever the chronometer error exceeds approximately four minutes
 - C. At the start of each voyage
 - D. If the chronometer rate changes from gaining to losing or vice versa
00625. The center of a circle of equal altitude, plotted on the surface of the Earth, is the _____.
- A. dead reckoning position of the observer
 - B. assumed position of the observer
 - C. geographical position of the body
 - D. assumed position of the body
00626. What indicates the arrival of a hurricane within 24 to 36 hours?
- A. The normal swell becoming lower and from a steady direction
 - B. Long bands of nimbostratus clouds radiating from a point over the horizon
 - C. The barometer drops 2 millibars between 1000 and 1600
 - D. Unusually good weather with above average pressures followed by a slow fall of 4 millibars in six hours
00627. You are on a coastwise voyage bound for Marcus Hook, PA. Your speed is 15 knots. You wish to use the flood tide to facilitate docking starboard side to, heading seaward. To have the most favorable tide throughout, you should time your arrival at the entrance to Delaware Bay _____.
- A. for 1 hour before flood begins
 - B. for 1 hour after flood begins
 - C. for 3 hours after flood begins
 - D. for 1 hour before ebb begins
00628. What is the mark on a lead line indicating 17 fathoms?
- A. Wooden toggle
 - B. White linen rag
 - C. Red woolen rag
 - D. No marking

00629. The rise and fall of the ocean's surface due to a distant storm is known as _____.
- A. sea
 - B. waves
 - C. fetch
 - D. swell
00630. What kind of weather would you expect to accompany the passage of a tropical wave?
- A. Heavy rain and cloudiness
 - B. Good weather
 - C. A tropical storm
 - D. Dense fog
00631. A light characteristic of composite group-flashing indicates that there is a(n) _____.
- A. sharp turn in the channel
 - B. narrowing in the channel at that point
 - C. junction in the channel
 - D. obstruction that must be left to port
00632. You must construct a Mercator projection for an area bounded by latitudes 40° - 47° N and longitudes 176° E to 176° W on a paper 28 X 36 inches. Allow a neat line of one inch. What will be the separation between meridians?
- A. 3.190 inches
 - B. 3.249 inches
 - C. 3.529 inches
 - D. 3.714 inches
00633. You have another ship overtaking you close aboard to starboard. You have 3 radar targets bearing 090° relative at ranges of .5 mile, 1 mile and 1.5 miles. In this case, the unwanted echoes are called _____.
- A. multiple echoes
 - B. spoking
 - C. indirect echoes
 - D. side-lobe echoes
00634. Which of the following will cause the ARPA to emit either, or both, a visual or audible alarm?
- A. An acquired target entering into a guard zone
 - B. A tracked target lost for one radar scan
 - C. A tracked target entering your preset CPA-TCPA limits
 - D. A target being initially detected within a guard zone
00636. Tropical cyclones are classified by form and intensity. Which of the four mentioned disturbances does not have closed isobars?
- A. Hurricane
 - B. Tropical disturbance
 - C. Tropical depression
 - D. Cyclone

00637. Your draft is 24 feet. You wish to pass over an obstruction near Lovell Island, MA, on 6 May 1983. The charted depth is 22 feet. Allowing a safety margin of 3.0 feet, what is the earliest time after 0200 DST (ZD +4) that this passage can be made?
- A. 0215
 - B. 0245
 - C. 0310
 - D. 0350
00638. Swell is the rise and fall of the ocean's surface due to _____.
- A. fetch
 - B. distant winds
 - C. local storms
 - D. the pull of the moon
00639. What type of cloud formations would you expect to see to the west of an approaching tropical wave?
- A. Cumulus clouds lined up in rows extending in a northeast to southwest direction
 - B. High altostratus clouds in the morning hours
 - C. Cirrostratus clouds lined up in rows extending in a northeast to southwest direction
 - D. Cirrostratus clouds lined up in rows extending in a north to south direction
00640. What is the mark on a lead line indicating 20 fathoms?
- A. Line with two knots
 - B. Two strips of leather
 - C. Two pieces of rag
 - D. Two lengths of line
00641. Buoys which mark isolated dangers are painted with alternating _____.
- A. red and black bands
 - B. green and black bands
 - C. red and white stripes
 - D. green and white bands
00642. Which government agency publishes the U.S. Coast Pilot?
- A. Army Corps of Engineers
 - B. Defense Mapping Agency
 - C. National Ocean Service
 - D. U.S. Coast Guard
00643. When using the radar for navigating _____.
- A. the best fix is obtained by using a tangent bearing and a range
 - B. and using two radar ranges for a fix, the objects of the ranges should be close to reciprocal bearings
 - C. and using ranges, the most rapidly changing range should be measured last
 - D. and crossing a radar range of one object with the visual bearing of a second object, the two objects should be 80° to 110° apart

00644. Your ARPA has been tracking a target and has generated the targets course and speed. The radar did not receive a target echo on its last two scans due to the weather. What should you expect under these circumstances?
- A. The ARPA will generate data as if the target was still being tracked by radar.
 - B. The ARPA will give an audible and/or visual lost target alarm.
 - C. The ARPA will generate data based on sea return echoes from the vicinity where the target was lost.
 - D. The ARPA has lost all "memory" of the target and must recompute the target data.
00645. The arc of an hour circle between the celestial equator and a point on the celestial sphere, measured northward or southward through 90°, is the _____.
- A. altitude
 - B. declination
 - C. latitude
 - D. azimuth angle
00646. You have determined that you are in the right semicircle of a tropical cyclone in the Northern Hemisphere. What action should you take to avoid the storm?
- A. Place the wind on the starboard quarter and hold that course
 - B. Place the wind on the port quarter and hold that course
 - C. Place the wind on the port bow and hold that course
 - D. Place the wind on the starboard bow and hold that course
00647. You will enter Argentia, Newfoundland, at 1200 (ZD +3), 5 October 1983. What will be the height of tide based on the Canadian chart datum?
- A. 0.51 feet
 - B. 1.2 feet
 - C. 2.1 feet
 - D. 3.4 feet
00649. You are on course 226° T. In order to check the latitude of your vessel, you should observe a celestial body on which bearing?
- A. 226°
 - B. 270°
 - C. 000°
 - D. 026°
00650. What classification of tropical cyclone would have closed isobars, counter clockwise rotary circulation, and sustained winds between 34 and 63 knots?
- A. A tropical disturbance
 - B. A tropical depression
 - C. A tropical storm
 - D. A hurricane
00651. Which topmark in illustration D023NG identifies an isolated danger?
- A. A
 - B. B
 - C. C
 - D. D

00652. What agency of the U.S. Government issues charts of U.S. waters and Coast Pilots?
- A. National Ocean Service
 - B. Defense Mapping Agency
 - C. U.S. Coast Guard
 - D. U.S. Naval Observatory
00653. You have been observing your radar screen and notice that a contact on the screen has remained in the same position for several minutes. Your vessel is making 10 knots through the water. Which of the following statements is TRUE?
- A. The contact is dead in the water.
 - B. The contact is on the same course and speed as your vessel.
 - C. The contact is on a reciprocal course at the same speed as your vessel.
 - D. The radar is showing false echoes and is probably defective.
00654. Your ARPA has automatic speed inputs from the log. Due to currents, the log is indicating a faster speed than the speed over the ground. What should you expect under these circumstances?
- A. The generated CPA will be less than the actual CPA.
 - B. The generated TCPA will be later than the actual TCPA.
 - C. The range of initial target acquisition will be less than normal.
 - D. The targets true course vector will be in error.
00655. The equator is _____.
- A. the primary great circle of the Earth perpendicular to the axis
 - B. the line to which all celestial observations are reduced
 - C. the line from which a celestial body's altitude is measured
 - D. All of the above
00656. In the Northern Hemisphere you are caught in the dangerous semicircle with plenty of sea room available. The best course of action is to bring the wind on the _____.
- A. starboard bow and make as much headway as possible
 - B. starboard quarter, and make as much headway as possible
 - C. port quarter, and make as much headway as possible
 - D. port bow, and make as much headway as possible
00657. Current refers to the _____.
- A. vertical movement of the water
 - B. horizontal movement of the water
 - C. density changes in the water
 - D. None of the above
00658. Monsoons are characterized by _____.
- A. light, variable winds with little or no humidity
 - B. strong, gusty winds that blow from the same general direction all year
 - C. steady winds that reverse direction semiannually
 - D. strong, cyclonic winds that change direction to conform to the passage of an extreme low pressure system

00659. What is the mark on a lead line indicating 25 fathoms?
- A. Leather with two holes
 - B. White linen rag
 - C. Red woolen rag
 - D. Line with one knot
00661. Under the IALA Buoyage Systems, safe water marks may show a _____.
- A. composite group-flashing, Fl(2 + 1), red light
 - B. composite group-flashing, Fl(2 + 1), green light
 - C. quick-flashing, Q(9)15s, white light
 - D. white Morse (A) light
00662. What publication contains descriptions of the coast line, buoyage systems, weather conditions, port facilities, and navigation instructions for the United States and its possessions?
- A. Coast Pilots
 - B. Sailing Directions
 - C. Port Index
 - D. Light List
00663. You are underway at 10 knots. At 1800 you note a radar contact dead ahead at a range of 10 miles. At 1812 the contact is dead ahead at a range of 8 miles. The estimated speed of the contact is _____.
- A. dead in the water
 - B. 5 knots
 - C. 10 knots
 - D. 15 knots
00664. Which of the following ARPA data should you use in order to determine if a close quarters situation will develop with a target vessel?
- A. Set and drift of the current
 - B. Relative track information
 - C. Predicted time of CPA
 - D. Initial range of acquisition
00665. 17 degrees of latitude is equal to _____.
- A. 68 miles
 - B. 510 miles
 - C. 1020 miles
 - D. 4080 miles
00666. In the Northern Hemisphere, your vessel is believed to be in the direct path of a hurricane, and plenty of sea room is available. The best course of action is to bring the wind on the _____.
- A. starboard bow, note the course, and head in that direction
 - B. starboard quarter, note the course, and head in that direction
 - C. port quarter, note the course, and head in that direction
 - D. port bow, note the course, and head in that direction

00667. The navigable semicircle of a typhoon in the Southern Hemisphere is the area _____.
- A. behind the typhoon, measured from 90° to 180° from each side of the storm's track
 - B. to the right of the storm's track
 - C. ahead of the typhoon, measured from the storm's track to 90° on each side
 - D. measured from due south, counterclockwise 180°
00668. You are enroute to assist vessel A. Vessel A is underway at 6 knots on course 133° T, and bears 042° T at 105 miles from you. What is the course to steer at 10 knots to intercept vessel A?
- A. 083°
 - B. 088°
 - C. 093°
 - D. 099°
00670. A NAVAREA warning carries the following number; 1986/87 (11). Which of the following statements is true?
- A. The warning was issued in 1986, the 87th sequentially numbered warning and broadcast 11 times.
 - B. This is warning number 1986 issued in 1987, and it affects sub-region 11.
 - C. This warning is valid in 1986 and 1987 and is the eleventh two-year warning.
 - D. The subject of this warning first appeared in 1986; this warning is in 1987 and is the eleventh on this topic.
00671. You sight a buoy fitted with a double-sphere topmark. If sighted at night, this buoy would show _____.
- A. a quick-flashing red light
 - B. a quick-flashing green light
 - C. a white flashing light showing a group of two flashes
 - D. a red flashing light showing a group of three flashes
00672. You are planning to enter an unfamiliar U.S. port. What publication provides information about channel depths, dangers, obstructions, anchorages and marine facilities available in that port?
- A. American Practical Navigator
 - B. Notice to Mariners
 - C. United States Coast Pilot
 - D. Sailing Guide
00673. You are underway at 5 knots and see on your radar a contact 10 miles directly astern of you. 12 minutes later, the contact is 8 miles directly astern of you. What is the estimated speed of the contact?
- A. Dead in the water
 - B. 1 knot
 - C. 10 knots
 - D. 15 knots

00674. When using an ARPA, which of the following should you consider in order to evaluate the information displayed?
- A. The target vessel's generated course and speed are based solely on radar inputs.
 - B. Navigational constraints may require a target vessel to change course.
 - C. The trial maneuver feature will automatically determine a course that will clear all targets.
 - D. You cannot determine if a small target has been lost due to sea return.
00675. 15° of latitude is equal to _____.
- A. 600 miles
 - B. 900 miles
 - C. 1200 miles
 - D. 1500 miles
00676. If you are caught in the left semicircle of a tropical storm, in the Southern Hemisphere, you should bring the wind _____.
- A. on the starboard quarter, hold course and make as much way as possible
 - B. 2 points on the port quarter, and make as much way as possible
 - C. on the port bow, and make as much way as possible
 - D. dead ahead and heave to
00677. A swift current occurring in a narrow passage connecting two large bodies of water, which is produced by the continuously changing difference in height of tide at the two ends of the passage, is called a _____.
- A. hydraulic current
 - B. rectilinear current
 - C. rotary current
 - D. harmonic current
00678. On 25 December 1981 you observe the Sun's lower limb. The sextant altitude (hs) is 4°06.9'. The height of eye is 47 feet and the index error is 1.6' on the arc. The temperature is 19° F. and the barometer reads 1030.8 millibars. What is the observed altitude (Ho)?
- A. 3°57.4'
 - B. 4°01.9'
 - C. 4°02.5'
 - D. 4°03.4'
00679. A tropical wave is usually preceded by _____.
- A. tropical storms
 - B. good weather
 - C. heavy rain and cloudiness
 - D. heavy seas
00680. The apparent wind's speed can be zero only when two conditions are present. One condition is that the true _____.
- A. wind must be on the beam
 - B. wind's speed must be zero
 - C. wind must be from dead ahead
 - D. wind's speed equals the ship's speed

00681. You sight a spar buoy with the top mark shown in illustration D027NG. You must _____.
- A. pass to the east of the buoy
 - B. pass to the south of the buoy
 - C. pass to the north of the buoy
 - D. keep well clear of the buoy and pass on either side
00682. Which of the following tables is NOT found in the U.S. Coast Pilots?
- A. Climatological table
 - B. Luminous range table
 - C. Meteorological table
 - D. Coastwise distance table
00683. A radar contact will remain stationary on a relative motion radar display only when it is _____.
- A. on the same course as your vessel
 - B. at the same speed as your vessel
 - C. on the same course and speed as your vessel
 - D. on a reciprocal course at the same speed as your vessel
00684. The ARPA may swap targets when automatically tracking if two targets _____.
- A. are tracked on reciprocal bearings
 - B. are tracked at the same range
 - C. are tracked on the same bearing
 - D. pass close together
00685. Thirty-two meters equals _____.
- A. 17.50 feet
 - B. 58.52 feet
 - C. 96.00 feet
 - D. 104.99 feet
00686. The pressure gradient between the horse latitudes and doldrums runs _____.
- A. east-west
 - B. north-south
 - C. northeast-southeast
 - D. northwest-southwest
00687. The drift and set of tidal, river, and ocean currents refer to the _____.
- A. position and area of the current
 - B. speed and direction toward which the current flows
 - C. type and characteristic of the current's flow
 - D. None of the above
00688. In mid-ocean, the characteristics of a wave are determined by three factors. Which of the following is NOT one of these factors?
- A. Effect of the moon's gravity
 - B. Fetch
 - C. Wind velocity
 - D. Length of time a wind has been blowing

00689. What is the index error of sextant C in illustration D050NG?
- A. 0'20" on the arc
 - B. 1'00" on the arc
 - C. 2'00" on the arc
 - D. 5'10" on the arc
00690. What level of development of a tropical cyclone has a hundred mile radius of circulation, gale force winds, less than 990 millibars of pressure and vertically formed cumulonimbus clouds?
- A. A tropical disturbance
 - B. A tropical depression
 - C. A tropical storm
 - D. A typhoon
00691. Of the four light characteristics shown in illustration D019NG, which one does NOT represent a safe water mark of the IALA Buoyage Systems?
- A. A
 - B. B
 - C. C
 - D. D
00692. What publication should you check for complete information on Puget Sound weather conditions?
- A. Sailing Directions
 - B. Light List
 - C. Coast Pilot
 - D. Chart of the area
00693. Which general statement concerning radar is NOT true?
- A. Raising the antenna height increases the radar range.
 - B. The ability of radar to detect objects is unaffected by weather conditions.
 - C. Radar bearings are less accurate than radar ranges.
 - D. Radar should be checked regularly during clear weather to ensure that it is operating properly.
00694. Your ARPA has two guard zones. What is the purpose of the inner guard zone?
- A. Alert the watch officer that a vessel is approaching the preset CPA limit
 - B. Warn of small targets that are initially detected closer than the outer guard zone
 - C. Guard against target loss during critical maneuvering situations
 - D. Sound an alarm for targets first detected within the zone
00695. An azimuth angle for a body is measured from the _____.
- A. observer's meridian
 - B. Greenwich meridian
 - C. body's meridian
 - D. zenith distance
00696. The diurnal pressure variation is most noticeable in the _____.
- A. polar regions
 - B. horse latitudes
 - C. roaring forties
 - D. doldrums

00697. The set of the current is the _____.
A. speed of the current at a particular time
B. maximum speed of the current
C. direction from which the current flows
D. direction in which the current flows
00698. You are in LONG 165° E, zone time at 0400, 1 November 1981. What is the zone time and date in LONG 165° W?
A. 0600, 31 October
B. 1800, 31 October
C. 1800, 1 November
D. 0600, 1 November
00699. You are enroute to assist vessel A. Vessel A is underway at 6 knots on course 133° T, and bears 343° T at 92 miles from you. What is the course to steer at 9 knots to intercept vessel A?
A. 033°
B. 038°
C. 042°
D. 047°
00701. In the IALA Buoyage Systems, buoys with alternating red and green horizontal bands are used to indicate _____.
A. fishing areas
B. spoil grounds
C. the preferred channel
D. isolated dangers
00702. What publication contains information on navigation regulations, landmarks, channels, anchorages, tides, currents, and clearances of bridges for Chesapeake Bay?
A. Coast Pilot
B. Light List
C. Sailing Directions
D. Pilot Charts
00703. Which of the following statements concerning the operation of radar in fog is TRUE?
A. Radar ranges are less accurate in fog.
B. Navigation buoys will always show up on radar.
C. A sandy beach will show up clearer on radar than a rocky cliff.
D. Small wooden boats may not show up on radar.
00704. Which of the following is TRUE of the history display of a target's past positions on an ARPA?
A. It provides a graphic display to emphasize which vessel is on a collision course.
B. In the true presentation, it provides a quick visual check to determine if a vessel has changed course.
C. The display is one of the primary inputs and must be in use when using the trial maneuver capability.
D. It provides a graphic display of a target vessel's relative course, speed, and CPA.

00705. The precession of the equinoxes occurs in a(n) _____.
A. easterly direction
B. westerly direction
C. northerly direction
D. southerly direction
00706. A steep barometric gradient indicates _____.
A. calms
B. light winds
C. strong winds
D. precipitation
00707. Set of the current is _____.
A. its velocity in knots
B. direction from which it flows
C. estimated current
D. direction towards which it flows
00708. Which of the following statements about Radio Navigational Warning Broadcasts is TRUE?
A. Radio navigational warnings are valid for 10 days, unless cancelled earlier.
B. NAVAREA warnings cover coastal areas only, while HYDROLANTS or HYDROPACS cover entire ocean areas.
C. Radio navigational warnings issued by DMAHTC are printed in the Daily Memorandum and the Notice to Mariners.
D. HYDROLANTS and HYDROPACS cover the same geographical areas as NAVAREA warnings, but are for use of military vessels only.
00709. A sea breeze is a wind _____.
A. that blows towards the sea at night
B. that blows towards an island during the day
C. caused by cold air descending a coastal incline
D. caused by the distant approach of a hurricane
00710. What is the FIRST sign of the existence of a well developed tropical cyclone?
A. Gale force winds from the north
B. An unusually long ocean swell
C. Steep, short-period waves and light wind
D. Thunderstorms and higher than usual humidity
00711. In the IALA Maritime Buoyage Systems, a red and white vertically-striped buoy is used as a(n) _____.
A. safe water mark
B. cardinal mark
C. isolated danger mark
D. special mark not primarily used for navigation
00712. Information about the pilotage available at Miami harbor may best be obtained from which of the following publications?
A. World Port Index
B. Sailing Directions
C. Pilot Chart
D. United States Coast Pilot

00713. The closest point of approach (CPA) of a contact on a relative motion radar may be determined _____.
- A. immediately when the contact is noted on radar
 - B. only if the radar scope is watched constantly
 - C. after the contact has been marked at least twice
 - D. by an occasional glance at the radar
00714. When using the ARPA in heavy rain, what action should you take?
- A. Increase the radar gain to pick up weak echoes through the rain
 - B. Increase the STC setting to reduce close-in spurious signals
 - C. Navigate as though the effective range of the radar has been reduced
 - D. Increase the range of the inner and outer guard rings
00715. The length of the year with respect to the vernal equinox is the _____.
- A. tropical year
 - B. sidereal year
 - C. anomalistic year
 - D. All of the above
00716. Standard atmospheric pressure in inches of mercury is _____.
- A. 30.00
 - B. 28.92
 - C. 29.92
 - D. 29.00
00717. Which term refers to the direction a current is flowing?
- A. Set
 - B. Drift
 - C. Vector direction
 - D. Stand
00718. You are to sail from Elizabethport, N.J., on 22 May 1983 with a maximum draft of 28 feet. You will pass over an obstruction in the channel near Sandy Hook that has a depth of 27 feet. The steaming time from Elizabethport to the obstruction is 1h 40m. What is the earliest time (ZD +4) you can sail on the afternoon of 22 May and pass over the obstruction with 3 feet of clearance?
- A. 1354
 - B. 1324
 - C. 1305
 - D. 1252
00719. You are on course 209° T. In order to check the longitude of your vessel, you should observe a celestial body on which bearing?
- A. 209°
 - B. 270°
 - C. 299°
 - D. 000°

00720. What change in the condition of the seas could indicate the formation of a tropical storm or hurricane several hundred miles from your location?
- A. A long swell from an unusual direction
 - B. A lengthy lull in the wind and seas
 - C. Large seas coming from different directions
 - D. A brisk chop from the southeast
00721. Under the IALA Buoyage Systems, a red and white vertically-striped buoy would NOT indicate _____.
- A. a landfall
 - B. the extreme end of an islet
 - C. a mid-channel
 - D. a center line
00722. Which of the following would describe the explosive anchorages in the ports on the east coast of the United States?
- A. Sailing Directions
 - B. Pilot Rules for Inland Waters
 - C. Coast Pilot
 - D. Notice to Mariners
00723. If there is any doubt as to the proper operation of a radar, which of the following is TRUE?
- A. Only a radar expert can determine if the radar is operating.
 - B. All radars have indicator lights and alarms to signal improper operation.
 - C. A radar range compared to the actual range of a known object can be used to check the operation of the radar.
 - D. The radar resolution detector must be energized to check the radar.
00724. Your ARPA shows a target on your starboard bow, crossing from starboard to port, and predicts a collision. To ensure that the ARPA continues to generate valid data when maneuvering to avoid the target, you should _____.
- A. alter course to port or starboard to open the CPA to a 1 mile minimum
 - B. use the minimum course change needed to move the relative track display astern of the target
 - C. use the trial maneuver to determine a course that will leave the target vessel astern
 - D. make a large alteration of course to starboard
00725. The First Point of Aries is the position of the Sun on the celestial sphere on or about _____.
- A. March 21
 - B. June 21
 - C. September 21
 - D. December 21
00726. Atmospheric pressure at sea level is equal to _____.
- A. 14.7 pounds per square inch
 - B. 29.92 inches of mercury
 - C. 1013.25 millibars
 - D. All of the above

00727. What is an ebb current?

- A. A current at minimum flow
- B. A current coming in
- C. A current going out
- D. A current at maximum flow

00728. In the Bay of Fundy, during twilight, you take sight of Mars. The sextant altitude (hs) is $03^{\circ}35.5'$. Your height of eye is 32 feet and there is no index error. The air temperature is -10°C and the barometer reads 1010 millibars. What is the observed altitude (Ho)?

- A. $03^{\circ}14.5'$
- B. $03^{\circ}15.8'$
- C. $03^{\circ}16.2'$
- D. $03^{\circ}28.8'$

00729. The doldrums are characterized by _____.

- A. steady, light to moderate winds
- B. frequent calms
- C. clear skies
- D. low humidity

00730. The largest waves or swells created by a typhoon or hurricane will be located _____.

- A. in the southeast quadrant of the storm
- B. directly behind the storm center
- C. forward and to the right of its course
- D. behind and to the left of its course

00731. Under the IALA Buoyage Systems, a vertically-striped buoy may be striped red and _____.

- A. green
- B. black
- C. white
- D. yellow

00732. What publication has information on the climate, distances, navigation regulations, outstanding landmarks, channels and anchorages of Long Island Sound?

- A. Light List
- B. Coast Pilot
- C. Sailing Directions
- D. Pilot Chart

00733. Which of the following would give the best radar echo?

- A. The beam of a three masted sailing vessel with all sails set.
- B. A 110-foot fishing vessel with a radar reflector in its rigging.
- C. A 300-foot tanker, bow on.
- D. A 600-foot freighter, beam on.

00734. You are approaching Chatham Strait from the south in foggy weather. You have Coronation Island and Hazy Islands on the radar. Suddenly the radar malfunctions. You then resort to using whistle echoes to determine your distance off Coronation Island. Your stopwatch reads 16.3 seconds for the echo to be heard. How far are you off Coronation Island?
- A. 1.0 mile
 - B. 1.5 miles
 - C. 2.0 miles
 - D. 2.5 miles
00735. The period of the Earth's revolution from perihelion to perihelion is the _____.
- A. astronomical year
 - B. anomalistic year
 - C. solar year
 - D. sidereal year
00736. A line on a weather chart connecting places which have the same barometric pressure is called an _____.
- A. isotherm
 - B. isallobar
 - C. isobar
 - D. isotope
00737. Which of the following describes an ebb current?
- A. Horizontal movement of the water away from the land following low tide
 - B. Horizontal movement of the water toward the land following low tide
 - C. Horizontal movement of the water away from the land following high tide
 - D. Horizontal movement of the water toward the land following high tide
00739. The upper vertex of a great circle track is in LONG 156°00' E. Sailing eastward, the great circle track will cross the equator in LONG _____.
- A. 114°00' W
 - B. 110°00' W
 - C. 66°00' W
 - D. 66°00' E
00740. A very light breeze that causes ripples on a small area of still water is a _____.
- A. cat's paw
 - B. hog's breath
 - C. williwaw
 - D. chinook
00741. What is the light phase characteristic of a lighted isolated-danger mark (IALA Buoyage Systems)?
- A. Interrupted quick flashing
 - B. Very quick flashing
 - C. Long flashing
 - D. Group flashing

00742. You are preparing to take a tow from San Diego to Portland, OR. Good seamanship would require that you have on board, available for reference and use, all of the following EXCEPT the _____.
- A. Coast Pilot
 - B. Harbor and Coastal charts for ports of refuge enroute
 - C. Sailing Directions (Enroute)
 - D. Light List
00743. The Consol navigation system, used in Russian and Northern European, waters can be used _____.
- A. for precise navigation in coastal waters
 - B. by measuring the phase difference of the dots and dashes
 - C. as an aid to ocean navigation
 - D. if the vessel is fitted with a special Consol receiver
00744. A hand held instrument used to measure distances between objects and the ship is a _____.
- A. vernier
 - B. psychrometer
 - C. hygrometer
 - D. stadimeter
00745. Retrograde motion is the _____.
- A. movement of the points of intersection of the planes of the ecliptic and the equator
 - B. apparent westerly motion of a planet with respect to stars
 - C. movement of a superior planet in its orbit about the Sun
 - D. movement of the celestial north pole in an elliptical pattern in space
00746. Lines drawn through points on the Earth having the same atmospheric pressure are known as _____.
- A. isothermal
 - B. millibars
 - C. isobars
 - D. seismics
00747. The movement of water away from shore or downstream is called a(n) _____.
- A. reversing current
 - B. ebb current
 - C. flood current
 - D. slack current
00748. You are steaming west in the South Atlantic in an extratropical cyclonic storm, and the wind is dead ahead. According to the law of Buys Ballot, the center of low pressure lies _____.
- A. to the north of you
 - B. to the south of you
 - C. dead ahead of you
 - D. dead astern of you

00749. You are enroute to assist vessel A. Vessel A is underway at 4.5 knots on course 233° T, and bears 264° T at 68 miles from you. What is the course to steer at 13 knots to intercept vessel A?
- A. 249°
 - B. 256°
 - C. 262°
 - D. 268°
00750. On a working copy of a weather map, a cold front is represented by what color line?
- A. Red
 - B. Blue
 - C. Alternating red and blue
 - D. Purple
00751. Under the IALA Buoyage Systems, a yellow buoy may mark _____.
- A. fish net areas
 - B. spoil areas
 - C. military exercise zones
 - D. All of the above
00752. What publication would NOT be used on a voyage from Houston to New York?
- A. Coast Pilot
 - B. Light List
 - C. Radio Navigational Aids
 - D. Sailing Directions (Enroute)
00753. Which method of position-finding requires no special receiving equipment?
- A. Consol
 - B. Omega
 - C. Loran C
 - D. Decca
00754. Deviation in a compass is caused by the _____.
- A. vessel's geographic position
 - B. vessel's heading
 - C. earth's magnetic field
 - D. influence of the magnetic materials of the vessel
00755. The sidereal day begins when the _____.
- A. Sun is over the lower branch of the reference meridian
 - B. Sun is over the upper branch of the reference meridian
 - C. first point of Aries is over the lower branch of the reference meridian
 - D. first point of Aries is over the upper branch of the reference meridian
00756. Which of the following is a common unit of measure for atmospheric pressure?
- A. Knots
 - B. Inches
 - C. Degrees
 - D. Feet

00757. The term "flood current" refers to that time when the water _____.
A. is flowing towards the land
B. is moving towards the ocean
C. level is not changing
D. level is rising because of heavy rains
00758. A tropical cyclone has recurved and entered temperate latitudes. In the Northern Hemisphere when a large high pressure system lies north of the storm, what situation may occur?
A. The low may suddenly deepen, and the cyclone intensify and pick up speed.
B. The left semicircle may become the dangerous semicircle.
C. The low and the high may merge and cancel out the weather characteristics of each.
D. The high may force the cyclone to reverse its track.
00759. At 0000 you fix your position and plot a new DR track line. At 0200 you again fix your position and it is 0.5 mile west of your DR. Which of the following statements is TRUE?
A. The set is 090°, drift 0.5 knot.
B. The set is 270°, drift 0.25 knot.
C. The set is 270°, drift 0.5 knot.
D. The set is 270°, drift 1.0 knot.
00761. Under the IALA Buoyage Systems, a safe water mark may NOT _____.
A. be spherical
B. display a white light
C. be lettered
D. show a quick flashing light
00762. In addition to the Notice to Mariners, chart correction information may be disseminated through all of the following except the _____.
A. Summary of Corrections
B. Local Notice to Mariners
C. Daily Memorandum
D. Chart Correction Card
00763. Time signals broadcast by WWV and WWVH are transmitted _____.
A. every 15 minutes
B. every 30 minutes
C. every hour
D. continuously throughout day
00764. Magnetic variation changes with a change in _____.
A. the vessel's heading
B. sea conditions
C. seasons
D. the vessel's position
00765. Diurnal aberration is due to _____.
A. motion of the Earth in its orbit
B. rotation of the Earth on its axis
C. the body's orbital motion during the time required for its light to reach the Earth
D. a false horizon

00767. Which of the following describes a flood current?
- A. Horizontal movement of the water toward the land after high tide
 - B. Horizontal movement of the water toward the land after low tide
 - C. Horizontal movement of the water away from the land following high tide
 - D. Horizontal movement of the water away from the land following low tide
00771. Under the IALA Buoyage Systems, a spherical buoy will mark the _____.
- A. safe water
 - B. port side of the channel
 - C. a hazard to navigation
 - D. the position of an underwater cable
00772. The Local Notice to Mariners is published by the U.S. Coast Guard _____.
- A. daily
 - B. weekly
 - C. monthly
 - D. semiannually
00773. What is the basic principle of the magnetic compass?
- A. Magnetic materials of the same polarity repel each other and those of opposite polarity attract.
 - B. The Earth's magnetic lines of force are parallel to the surface of the Earth.
 - C. Magnetic meridians connect points of equal magnetic variation.
 - D. The compass needle(s) will, when properly compensated, lie parallel to the isogonic lines of the Earth.
00774. Variation is not constant; it is different with every change in _____.
- A. speed
 - B. vessel heading
 - C. geographical location
 - D. cargo
00775. A sidereal day is shorter than a solar day. This difference is due to _____.
- A. irregularities in the daily rotational rate of the Sun
 - B. the space motion of the solar system
 - C. the precession of the equinoxes
 - D. the use of the different reference points
00777. Slack water occurs when there is _____.
- A. no horizontal motion of the water
 - B. no vertical motion of the water
 - C. a weak ebb or flood current
 - D. neither a vertical nor a horizontal motion

00778. The navigable semicircle of a hurricane in the Northern Hemisphere is that area of the storm measured _____.
A. from true north clockwise to 180° T
B. from true north counterclockwise to 180° T
C. from the bow counterclockwise to 180° relative
D. from the direction of the storm's movement counterclockwise 180°
00779. Which sextant in illustration D050NG has an index error of 0'20" on the arc?
A. A
B. B
C. C
D. D
00780. Apparent wind speed blowing across your vessel while underway can be measured by a(n) _____.
A. barometer
B. wind vane
C. anemometer
D. thermometer
00781. The IALA Buoyage Systems do NOT apply to _____.
A. the sides and centerlines of navigable channels
B. natural dangers and other obstructions, such as wrecks
C. lighthouses and lightships
D. areas in which navigation may be subject to regulation
00782. Mariners are FIRST warned of serious defects or important changes to aids to navigation by means of _____.
A. marine broadcast Notice to Mariners
B. Weekly Notices to Mariners
C. corrected editions of charts
D. Light Lists
00783. Magnetism which is present only when the material is under the influence of an external field is called _____.
A. permanent magnetism
B. induced magnetism
C. residual magnetism
D. terrestrial magnetism
00784. Variation is the angular measurement between _____.
A. compass north and magnetic north
B. compass north and true north
C. magnetic meridian and the geographic meridian
D. your vessel's heading and the magnetic meridian
00785. An amplitude of the Sun in high latitudes _____.
A. is most accurate before sunrise
B. is most accurate after sunset
C. should only be observed when the Sun's lower limb is above the horizon
D. is most accurate when the Sun's center is observed on the visible horizon

00786. The greater the pressure difference between a high and a low pressure center, the _____.
A. dryer the air mass will be
B. cooler the temperature will be
C. greater the force of the wind will be
D. warmer the temperature will be
00787. You are on a voyage from New Orleans to Boston. When navigating off the Florida coast, you will get the greatest benefit from the Gulf Stream if you navigate _____.
A. about 45 miles east of Cape Canaveral
B. about 25 miles east of Daytona Beach
C. along the 50-fathom curve
D. close inshore between Fowey Rocks and Jupiter Inlet
00789. The dangerous semicircle of a hurricane in the Northern Hemisphere is that area of the storm _____.
A. to the right of the storm's track
B. measured from true north clockwise to 180° T
C. measured from true north counterclockwise to 180° T
D. between the ship's heading and the bearing to the eye
00790. At 0000 you fix your position and plot a new DR track line. At 0030 you again fix your position and it is 0.5 mile from your 0030 DR. Which statement is TRUE?
A. The current is westerly.
B. The drift is 0.5 knot.
C. You must alter course to the left to regain the track line.
D. None of the above
00791. Under the IALA Buoyage Systems, the topmark of a red and white vertically-striped buoy shall be _____.
A. X-shaped
B. two black spheres
C. a single red sphere
D. a single red cone
00792. Information about temporary, short term changes affecting the safety of navigation in U.S. waters is disseminated to navigational interests by the _____.
A. Daily Memorandum
B. HYDROLANT or HYDROPAC broadcasts
C. Local Notice to Mariners
D. Summary of Corrections
00793. The permanent magnetism of a vessel may change in strength due to _____.
A. a collision with another vessel
B. being moored on a constant heading for a long period of time
C. being struck by lightning
D. Any of the above

00794. Your position is LAT 30° N, LONG 45° W. From this position you receive an RDF bearing from a transmitting vessel in LAT 32° N, LONG 40° W. The bearing corrected for calibration error is 63.7°. What is the direction of the rhumb line between these two positions?
- A. 65.9°
 - B. 65.0°
 - C. 63.7°
 - D. 62.4°
00795. The path of a celestial body during its daily apparent revolution around the Earth is called its _____.
- A. ecliptic
 - B. diurnal circle
 - C. altitude circle
 - D. circle of position
00796. Cyclones tend to move _____.
- A. perpendicular to the isobars in their warm sectors
 - B. parallel to the isobars in their warm sectors
 - C. parallel to the line of the cold front
 - D. perpendicular to the line of the cold front
00797. Which statement is TRUE concerning the current of the Gulf Stream?
- A. It reaches its daily maximum speed a few hours before the transit of the Moon.
 - B. It is slower at the time of neap tides than at spring tides.
 - C. When the Moon is at its maximum declination the stream is narrower than when the Moon is on the equator.
 - D. Variations in the trade winds affect the current.
00798. A HYDROLANT warning would normally be sent for all of the following EXCEPT _____.
- A. extinguishment of Robbins Reef Light in New York City's Upper Bay
 - B. unexploded ordinance in ocean waters at a depth of 78 fathoms
 - C. the presence of a large unwieldy tow in congested offshore water
 - D. a report of an overdue ship
00800. You are to sail from Elizabethport, N.J., on 17 November 1983 with a maximum draft of 27 feet. You will pass over an obstruction in the channel near Sandy Hook that has a depth of 26 feet. The steaming time from Elizabethport to the obstruction is 1h 50m. What is the earliest time (ZD + 5) you can sail on 17 November and pass over the obstruction with 2 feet of clearance?
- A. 0059
 - B. 0121
 - C. 0159
 - D. 0221
00801. You are entering an African port and see ahead of you a red can-shaped buoy. What action should you take?
- A. Alter course to leave the buoy to port
 - B. Alter course to leave the buoy to starboard
 - C. Pass the buoy close aboard on either side
 - D. Pass the buoy well clear on either side

00802. Which of the following is a weekly publication advising mariners of important matters affecting navigational safety?
- A. Light List
 - B. Notice to Mariners
 - C. Coast Pilot
 - D. Sailing Directions
00803. Which of the following buoys will NOT display white retroreflective material?
- A. Safe water mark
 - B. Isolated danger mark
 - C. Preferred channel mark
 - D. Daymark of no lateral significance
00804. A relative bearing is always measured from _____.
- A. true north
 - B. magnetic north
 - C. the vessel's beam
 - D. the vessel's head
00805. If the right ascension of a body is 9 hours, it also _____.
- A. is 135°
 - B. corresponds to an SHA for the body of 45°
 - C. means that the GP of the body is in the western hemisphere
 - D. All of the above
00807. The approximate mean position of the axis of the Gulf Stream east of Palm Beach, FL, is _____.
- A. 35 nautical miles
 - B. 25 nautical miles
 - C. 15 nautical miles
 - D. 5 nautical miles
00808. On a working copy of a weather map, a stationary front is represented by what color line?
- A. Red
 - B. Blue
 - C. Alternating red and blue
 - D. Purple
00809. The compass rose on a nautical chart indicates both variation and _____.
- A. deviation
 - B. annual rate of variation change
 - C. precession
 - D. compass error
00811. Under the IALA-A Buoyage System, a green spar buoy with a triangular topmark would indicate that the buoy _____.
- A. should be left to port when heading out to sea
 - B. may be left close aboard on either side
 - C. is on the north side of a point of interest
 - D. is marking the preferred channel

00812. Defects and/or changes in aids to navigation are published by means of _____.
- A. Local Notice to Mariners
 - B. Weekly Notice to Mariners
 - C. marine broadcasts
 - D. All of the above
00813. At the magnetic equator there is no induced magnetism in the vertical soft iron because _____.
- A. the lines of force cross the equator on a 0°-180° alignment
 - B. the quadrantal error is 0°
 - C. there is no vertical component of the Earth's magnetic field
 - D. the intercardinal headings have less than 1° error
00814. Frost smoke will occur when _____.
- A. extremely cold air from shore passes over warmer water
 - B. warm dry air from shore passes over cooler water
 - C. cold ocean water evaporates into warm air
 - D. cool rain passes through a warm air mass
00816. Cyclones that have warm sectors usually move _____.
- A. westerly
 - B. parallel to the isobars in the warm sector
 - C. toward the nearest high pressure area
 - D. faster than the accompanying cold front
00817. Which current would you encounter on a direct passage from London, England, to Capetown, South Africa?
- A. Falkland Current
 - B. Brazil Current
 - C. Norway Current
 - D. Benguela Current
00818. Ocean swells originating from a typhoon can move ahead of it at speeds near _____.
- A. 10 knots
 - B. 20 knots
 - C. 30 knots
 - D. 50 knots
00819. Which sextant in illustration D050NG has an index error of 4'20" off the arc?
- A. A
 - B. B
 - C. C
 - D. D
00821. Under the IALA-A Buoyage System, a buoy used as a lateral mark would NOT show which light characteristic?
- A. Isophase
 - B. Quick flashing
 - C. Long flashing
 - D. Group Flashing (2 + 1)

00822. Charts should be corrected by using information published in (the) _____.
- A. Light List
 - B. American Practical Navigator
 - C. Notice to Mariners
 - D. Coast Pilot
00823. The greatest directive force is exerted on the magnetic compass when the _____.
- A. needles are nearly in line with the meridian
 - B. vessel is near the magnetic poles
 - C. variation is near zero
 - D. vessel is near the magnetic equator
00824. An "atoll cloud" forming over an island due to heating of the land during the daytime would be what type?
- A. Cirrus
 - B. Cumulus
 - C. Stratus
 - D. Nimbus
00825. While steering a course of 150° T, you wish to observe the Sun for a speed check. What would the azimuth have to be?
- A. 000° T
 - B. 090° T
 - C. 150° T
 - D. 240° T
00826. In the U.S., which direction do air masses usually move?
- A. Easterly
 - B. Southerly
 - C. Northerly
 - D. Southwesterly
00827. The Benguela Current flows in a _____.
- A. SW'ly direction along the NW coast of Africa
 - B. S'ly direction off the East Coast of Australia
 - C. NW'ly direction along the SW coast of Africa
 - D. SW'ly direction along the SE coast of Greenland
00828. The true wind has been determined to be from 210° T, speed 12 knots. You desire the apparent wind to be 30 knots from 10° on the port bow. What course must you steer, and what speed must you make for this to occur?
- A. 235° T, 18.6 knots
 - B. 245° T, 20.0 knots
 - C. 325° T, 22.4 knots
 - D. 335° T, 23.6 knots

00829. You are plotting a running fix in an area where there is a determinable current. How should this current be treated in determining the position?
- A. The drift should be added to the ship's speed.
 - B. The set should be applied to the second bearing.
 - C. The current should be ignored.
 - D. The course and speed made good should be determined and used to advance the LOP.
00830. The highest frequency of tropical cyclones in the North Atlantic Ocean occurs during _____.
- A. January, February and March
 - B. April, May and June
 - C. August, September and October
 - D. July, November and December
00831. Under the IALA-A Buoyage system, a buoy marking the starboard side of the channel when approaching from seaward may have a _____.
- A. triangular topmark
 - B. red light
 - C. can shape
 - D. isophase light
00832. What is the most important source of information to be used in correcting charts and keeping them up to date?
- A. Fleet Guides
 - B. Notice to Mariners
 - C. Sailing Directions
 - D. Pilot Charts
00833. The magnetic compass magnets are acted on by the horizontal component of the Earth's total magnetic force. This magnetic force is GREATEST at the _____.
- A. north magnetic pole
 - B. south magnetic pole
 - C. magnetic prime vertical meridian
 - D. magnetic equator
00834. In many areas "atoll" clouds (clouds of vertical development) are produced over small islands. These are the result of _____.
- A. rising air currents produced by the warm islands
 - B. warm air from the sea rising over higher land areas
 - C. cool land air mixing with warm sea air
 - D. descending air over the islands
00835. When taking stars, those bodies to the east and west will _____.
- A. change altitude rapidly
 - B. change altitude slowly
 - C. remain in an almost fixed position
 - D. appear to be moving in the plane of the horizon

00836. In North America the majority of the weather systems move from _____.
A. north to south
B. south to north
C. east to west
D. west to east
00837. The Brazil Current flows in which general direction?
A. Northwesterly
B. Southwesterly
C. Southerly
D. Northerly
00841. Under the IALA-A Buoyage system, a buoy marking the port hand of the channel when approaching from seaward may NOT have a _____.
A. red light
B. conical shape
C. group-flashing light
D. square topmark
00842. Coast Pilots and navigational charts are kept corrected and up-to-date by using the _____.
A. pilot charts
B. Notices to Mariners
C. Tide Tables
D. Current Tables
00843. The line which connects the points of zero magnetic dip is _____.
A. an agonic line
B. the magnetic equator
C. a magnetic meridian
D. Any of the above
00844. A cloud of marked vertical development (often anvil-shaped) would be classified as _____.
A. cirrus
B. cirrocumulus
C. altocumulus
D. cumulonimbus
00845. During one synodic rotation, a body makes one complete turn relative to the _____.
A. Earth
B. Sun
C. stars
D. vernal equinox
00846. Weather in the middle latitudes generally travels from _____.
A. east to west
B. north to south
C. west to east
D. None of the above

00847. On a voyage from Halifax, N.S., to Dakar, West Africa, the Canary Current will _____.
A. set the vessel to the left
B. set the vessel to the right
C. offer resistance in the form of a head current
D. furnish additional thrust in the form of a fair or following current
00848. The difference between the DR position and a fix, both of which have the same time, is known as _____.
A. the estimated position
B. drift
C. current
D. leeway
00849. The Light List shows that a navigational light has a nominal range of 12 miles and a height above water of 25 feet. Your height of eye is 30 feet and the visibility is 0.5 mile. At what approximate range will you first sight the light?
A. 0.5 mile
B. 1.4 miles
C. 5.2 miles
D. 12.0 miles
00850. When is the peak of the hurricane season in the western North Pacific?
A. January through March
B. April through June
C. July through October
D. November through December
00851. You would expect to find channels marked with the IALA-A Buoyage System in _____.
A. the Philippines
B. Australia
C. Republic of Korea
D. Chile
00852. Which of the following is published by the U.S. Coast Guard?
A. Light List
B. Nautical Charts
C. Tide Tables
D. U.S. Coast Pilot
00853. The standard magnetic compass heading differs from the true heading by _____.
A. compass error
B. latitude
C. variation
D. deviation

00854. The appearance of nimbostratus clouds in the immediate vicinity of a ship at sea would be accompanied by which of the following conditions?
- A. Rain and poor visibility
 - B. Dropping barometric pressure and backing wind in the Northern Hemisphere
 - C. High winds and rising sea
 - D. Severe thunderstorms
00855. Which condition exists at the summer solstice in the Northern Hemisphere?
- A. The north polar regions are in continual darkness.
 - B. The Northern Hemisphere is having short days and long nights.
 - C. The Southern Hemisphere is having winter.
 - D. The Sun shines equally on both hemispheres.
00856. The flow of air around an anticyclone in the Southern Hemisphere is _____.
- A. clockwise and outward
 - B. counterclockwise and outward
 - C. clockwise and inward
 - D. counterclockwise and inward
00857. The current that, in many respects, is similar to the Gulf Stream is the _____.
- A. Kuroshio
 - B. California Current
 - C. Oyashio
 - D. Benguela Current
00858. Your ship is proceeding on course 320° T at a speed of 25 knots. The apparent wind is from 30° off the starboard bow, speed 32 knots. What is the relative direction, true direction and speed of the true wind?
- A. Relative 80°, true 040° T, 16.2 knots
 - B. Relative 40°, true 080° T, 16.4 knots
 - C. Relative 80°, true 060° T, 15.2 knots
 - D. Relative 60°, true 040° T, 18.6 knots
00859. At 1800 ZT on 31 October, your position is LAT 24°50' N, LONG 92°37' W. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). How should you encode the first three groups after the call sign if you estimate the wind?
- A. 31123, 99929, 70249
 - B. 31183, 99249, 79237
 - C. 31243, 99249, 70926
 - D. 01003, 99248, 70926
00860. The Light List shows that a navigational light has a nominal range of 10 miles and a height above water of 38 feet. Your height of eye is 52 feet and the visibility is 11.0 miles. At what approximate range will you first sight the light?
- A. 10.5 miles
 - B. 13.6 miles
 - C. 14.2 miles
 - D. 15.3 miles

00861. You would expect to find channels marked with the IALA-A Buoyage System in _____.
- A. Argentina
 - B. Japan
 - C. India
 - D. Canada
00862. The U.S. Coast Guard publishes _____.
- A. Light Lists
 - B. U.S. Coast Pilots
 - C. Radio Navigational Aids
 - D. All of the above
00863. The compass heading of a vessel differs from the true heading by _____.
- A. compass error
 - B. variation
 - C. magnetic dip
 - D. deviation
00864. Uniform, grayish-white cloud sheets that cover large portions of the sky, and are responsible for a large percentage of the precipitation in the temperate latitudes, are called _____.
- A. altostratus
 - B. altocumulus
 - C. cirrostratus
 - D. cirrocumulus
00865. The radius of a circle of equal altitude of a body is equal to the _____.
- A. coaltitude of the body
 - B. altitude of the body
 - C. codeclination of the body
 - D. polar distance
00866. Anticyclones are usually characterized by _____.
- A. dry, fair weather
 - B. high winds and cloudiness
 - C. gustiness and continuous precipitation
 - D. overcast skies
00867. Which of the following ocean currents is "warm" based on the latitude in which it originates and on the effect it has on climate?
- A. Kuroshio Current
 - B. Benguela Current
 - C. Peru Current
 - D. California Current

00868. Your ship received a HYDROLANT advising of a special warning to mariners from the Department of State for ships in the Persian Gulf. You are 400 miles south of, and bound for, the Persian Gulf. What action should you take?
- A. Continue on course as the warning is advisory in nature only
 - B. Send an AMVER report and acknowledge receipt of the warning
 - C. Remain a minimum of 500 miles outside the Persian Gulf and maintain radio silence
 - D. Send a MERWARN message advising your position, course, speed and intentions
00869. Tropical storms and hurricanes are most likely to form in the Southern hemisphere during _____.
- A. January through March
 - B. April through May
 - C. June through August
 - D. September through November
00871. Under the IALA-A Buoyage System, a buoy marking the starboard side of the channel when approaching from seaward must have a(n) _____.
- A. pillar shape
 - B. green color
 - C. square topmark
 - D. even number
00872. What agency publishes the Light Lists?
- A. United States Coast Guard
 - B. National Ocean Service
 - C. Oceanographic Office
 - D. Army Corps of Engineers
00873. Compass error is equal to the _____.
- A. deviation minus variation
 - B. variation plus compass course
 - C. algebraic sum of the variation and deviation
 - D. difference between true and magnetic compass
00874. Altostratus clouds are defined as _____.
- A. high clouds
 - B. middle clouds
 - C. low clouds
 - D. vertical development clouds
00875. Sidereal hour angle is always _____.
- A. measured westward from the hour circle containing the first point of Aries
 - B. measured from the point on the celestial sphere occupied by the Sun at the vernal equinox
 - C. subtracted from the LHA of the star to obtain the LHA of Aries
 - D. All of the above
00876. A generally circular low pressure area is called a(n) _____.
- A. cyclone
 - B. anticyclone
 - C. cold front
 - D. occluded front

00877. Cold water flowing southward through the western part of the Bering Strait between Alaska and Siberia is joined by water circulating counterclockwise in the Bering Sea to form the _____.
- A. Alaska Current
 - B. Subarctic Current
 - C. Kuroshio Current
 - D. Oyashio Current
00878. At 0600 ZT on 31 January, your position is LAT 00°49' S, LONG 84°27' E. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). How should you encode the first three groups after the call sign if you estimate the wind?
- A. 30243, 90008, 30848
 - B. 31003, 99049, 38427
 - C. 31003, 99008, 30844
 - D. 31063, 99049, 58427
00879. You are enroute to assist vessel A. Vessel A is underway at 4.5 knots on course 233° T, and bears 346° T at 68 miles from you. What is the course to steer at 13 knots to intercept vessel A?
- A. 328°
 - B. 323°
 - C. 318°
 - D. 314°
00881. Under the IALA-A Buoyage System, a buoy indicating the preferred channel is to starboard may have a _____.
- A. green light
 - B. long-flashing light characteristic
 - C. square topmark
 - D. conical shape
00882. Some lights used as aids to marine navigation have a red sector to indicate a danger area. The limits of a colored sector of a light are listed in the Light List in which of the following manners?
- A. Geographical positions outlining the area of the sector
 - B. True bearings as observed from the ship toward the light
 - C. An outline of the area of the sector
 - D. True bearings as observed from the light toward the ship
00883. In changing from a magnetic compass course to a true course, you should apply _____.
- A. variation
 - B. deviation
 - C. variation and deviation
 - D. a correction for the direction of current set
00884. Which of the following cloud types is normally associated with thunderstorms?
- A. Cirrus
 - B. Stratus
 - C. Cumulus
 - D. Cumulonimbus

00885. The daily path of a celestial body that is parallel to the celestial equator is the _____.
- A. altitude circle
 - B. vertical circle
 - C. diurnal circle
 - D. hour circle
00886. The circulation around a low pressure center in the Northern Hemisphere is _____.
- A. counterclockwise
 - B. variable
 - C. clockwise
 - D. anticyclonic
00887. Which current would you encounter on a direct passage from southern Africa to Argentina, South America?
- A. South Atlantic
 - B. South Equatorial
 - C. Agulhas
 - D. Guinea
00888. Recurvature of a hurricane's track usually results in the forward speed _____.
- A. increasing
 - B. decreasing
 - C. remaining the same
 - D. varying during the day
00889. The Light List shows that a navigational light has a nominal range of 6 miles and a height above water of 18 feet. Your height of eye is 47 feet and the visibility is 1.5 miles. At what approximate range will you first sight the light?
- A. 1.5 miles
 - B. 2.0 miles
 - C. 6.0 miles
 - D. 12.7 miles
00890. If several fixed navigational lights are visible at the same time, each one may be positively identified by checking all of the following EXCEPT what against the Light List?
- A. Rhythm
 - B. Period
 - C. Intensity
 - D. Color
00891. Under the IALA-A Buoyage System, a buoy indicating the preferred channel is to port would have _____.
- A. an even number
 - B. an odd number
 - C. a pillar shape
 - D. horizontal bands

00892. When a buoy is in position only during a certain period of the year, where may the dates when the buoy is in position be determined?
- A. Light List
 - B. Notice to Mariners
 - C. On the chart
 - D. Coast Pilot
00893. One point of a compass is equal to how many degrees?
- A. 7.5
 - B. 11.25
 - C. 17.5
 - D. 22.5
00894. On a clear, warm day, you notice the approach of a tall cumulus cloud. The cloud top has hard well defined edges and rain is falling from the dark lower edge. Should this cloud pass directly overhead _____.
- A. it will be preceded by a sudden increase in wind speed
 - B. it will be preceded by a sudden decrease in wind speed
 - C. the wind speed will not change as it passes
 - D. the wind will back rapidly to left in a counterclockwise direction as it passes
00895. The ecliptic is _____.
- A. the path the Sun appears to take among the stars
 - B. the path the Earth appears to take among the stars
 - C. a diagram of the zodiac
 - D. a great circle on a gnomonic chart
00896. The wind direction around a low pressure area in the Northern Hemisphere is _____.
- A. clockwise and inward
 - B. clockwise and outward
 - C. counterclockwise and inward
 - D. counterclockwise and outward
00897. What current flows southward along the west coast of the United States and causes extensive fog in that area?
- A. Davidson Current
 - B. North Pacific Current
 - C. Alaska Current
 - D. California Current
00898. At 1200 ZT, on 31 July, your position is LAT 24°33' N, LONG 173°05' W. You are preparing a weather report form, WS Form, B-80 (Illustration DO41NG). How should you encode the first three groups after the call sign if you estimate the wind?
- A. 01003, 99245, 71730
 - B. 01243, 92433, 71731
 - C. 31243, 99245, 71731
 - D. 31003, 92433, 71730
00899. A latitude line will be obtained by observing a body _____.
- A. on the prime vertical
 - B. on the celestial horizon
 - C. at lower transit
 - D. on the Greenwich meridian

00901. Under the IALA-A Buoyage System, a buoy indicating the preferred channel is to port can have a _____.
A. can shape
B. group-flashing (2) light
C. red and green vertical stripes
D. green light
00902. All of the following information concerning lighted aids to navigation may be read directly from the Light List EXCEPT the _____.
A. location
B. height of light above water
C. luminous range
D. light characteristics
00903. Eight points of a compass are equal to how many degrees?
A. 45
B. 90
C. 180
D. 360
00904. All of the following are associated with cumulonimbus clouds EXCEPT _____.
A. steady rainfall
B. hail storms
C. thunderstorms
D. tornadoes or waterspouts
00905. The Sun's center is coincident with the principal vertical circle when _____.
A. in lower transit
B. the hour circle and prime vertical are coincident
C. the declination is zero degrees and the azimuth is exactly N 135° E
D. the declination is zero degrees and the azimuth is exactly N 135° W
00906. In the Northern Hemisphere, an area of counterclockwise wind circulation surrounded by higher pressure is a _____.
A. low
B. high
C. warm front
D. cold front
00907. In which month will the equatorial counter current be strongest?
A. January
B. April
C. August
D. October
00908. From LAT 07°12' N, LONG 80°00' W, to LAT 47°12' S, LONG 169°18' E, the initial great circle course angle is 137.25°. How would you name this course?
A. N 137.25° E
B. S 137.25° E
C. N 137.25° W
D. S 137.25° W

00909. What is the average speed of movement of a hurricane prior to recurvature?
- A. 4 to 6 knots
 - B. 6 to 8 knots
 - C. 10 to 12 knots
 - D. 15 to 20 knots
00910. The Light List shows that a navigational light has a nominal range of 12 miles and a height above water of 25 feet. Your height of eye is 38 feet and the visibility is 5.5 miles. At what approximate range will you first sight the light?
- A. 5.5 miles
 - B. 6.8 miles
 - C. 8.0 miles
 - D. 12.0 miles
00911. Under the IALA-B Buoyage System, a buoy displaying a red light will _____.
- A. be left to starboard when entering from seaward
 - B. show a light characteristic of Morse Code "A"
 - C. be lettered
 - D. have a radar reflector
00912. The Light List Does NOT contain information on _____.
- A. Loran-C station systems
 - B. aeronautical lights useful for marine navigation
 - C. radiobeacon systems
 - D. radio direction finder calibration stations
00913. How many points are there in a compass card?
- A. 4
 - B. 8
 - C. 24
 - D. 32
00914. If the sky was clear, with the exception of a few cumulus clouds, it would indicate _____.
- A. rain
 - B. hurricane weather
 - C. fair weather
 - D. fog setting in
00915. The Sun's center may be coincident with both the celestial equator and the observer's prime vertical circle when _____.
- A. it crosses the December solstitial point
 - B. it crosses the June solstitial point
 - C. it is in upper transit
 - D. its declination is zero
00916. Bad weather is usually associated with regions of _____.
- A. low barometric pressure
 - B. high barometric pressure
 - C. steady barometric pressure
 - D. changing barometric pressure

00917. As the South Equatorial Current approaches the east coast of Africa, it divides with the main part flowing south to form the warm _____.
- A. Agulhas Current
 - B. Canary Current
 - C. Benguela Current
 - D. Madagascar Current
00918. At 1200 ZT, on 31 August, your position is LAT 43°14' S, LONG 175°44' E. You are preparing a weather report form, WS Form B-80 (Illustration DO41NG). How should you encode the first three groups after the call sign if you estimate the wind?
- A. 01003, 94314, 51757
 - B. 31003, 99432, 31757
 - C. 31123, 99432, 31754
 - D. 31243, 94314, 31757
00920. What is the average speed of the movement of a hurricane following the recurvature of its track?
- A. 5 to 10 knots
 - B. 20 to 30 knots
 - C. 40 to 50 knots
 - D. Over 60 knots
00921. Under the IALA-B Buoyage System, a conical buoy will be _____.
- A. red in color
 - B. numbered with an odd number
 - C. left to port when entering from seaward
 - D. All of the above
00922. How is the intensity of a light expressed in the Light Lists?
- A. Luminous range
 - B. Geographic range
 - C. Nominal range
 - D. Meteorological range
00923. A magnetic compass is marked in how many degrees?
- A. 90
 - B. 180
 - C. 360
 - D. 400
00924. The form of cloud often known as "mackerel sky" which is generally associated with fair weather is _____.
- A. nimbostratus
 - B. stratus
 - C. cirrocumulus
 - D. cumulonimbus
00925. Your vessel is at the equator at midnight on 1 January, and a star is observed rising. At what time will this same star rise on 1 February, assuming your vessel's location is still at the equator?
- A. 2208
 - B. 2110
 - C. 2158
 - D. 2317

0926. When a low pressure area is approaching, the weather generally _____.
- A. improves
 - B. gets worse
 - C. remains the same
 - D. is unpredictable
0927. The set of the equatorial countercurrent is generally to the _____.
- A. north
 - B. east
 - C. southwest
 - D. northwest
0929. Which of the following errors is NOT included in the term "current" when used in relation to a fix?
- A. Poor steering
 - B. Leeway
 - C. Known compass error
 - D. Ocean currents
00930. Which of the following statements about radio navigational warnings is TRUE?
- A. The topics for warnings included in HYDROLANTS, HYDROFACS, and NAVAREA warnings are the same.
 - B. NAVAREA warnings concern only coastal navigation and inland navigation in large bays or sounds such as Puget Sound.
 - C. The United States is responsible for NAVAREA warnings in the North Atlantic north of 7° N, and west of 15° W.
 - D. Long range radio navigational warnings are usually broadcast by radiotelephone, radiotelegraph, and radio-teletypewriter.
00931. Under the IALA-B Buoyage System, when entering from seaward, a buoy that should be left to port will be _____.
- A. black
 - B. red
 - C. green
 - D. yellow
00932. To find the specific phase characteristic of a lighthouse on a sound of the United States you would use the _____.
- A. American Practical Navigator
 - B. Light List
 - C. Nautical Chart Catalog
 - D. U.S. Coast Pilot
00933. How many degrees are there on a compass card?
- A. 360
 - B. 380
 - C. 390
 - D. 420

00934. Clouds that form as small white flakes or scaly globular masses covering either small or large portions of the sky are _____.
A. cirrus
B. cirrostratus
C. altostratus
D. cirrocumulus
00935. The Light List shows that a navigational light has a nominal range of 5 miles and a height above water of 21 feet. Your height of eye is 32 feet and the visibility is 1.0 mile. At what approximate range will you first sight the light?
A. 1.0 mile
B. 1.5 miles
C. 5.0 miles
D. 11.7 miles
00936. A cyclone in its final stage of development is called a(n) _____.
A. tornado
B. anticyclone
C. occluded cyclone or occluded front
D. polar cyclone
00937. The north equatorial current flows to the _____.
A. east
B. northeast
C. southwest
D. west
00938. You are hove to in a hurricane on a heading of 242° T. The anemometer indicates that the apparent wind is from 260° relative at 112 knots. How should this be encoded on the weather report form, WS Form B-80 (Illustration D041NG).
A. 02612
B. 82612
C. 83112
D. 86412
00939. That half of the hurricane to the right hand side of its track (as you face the same direction that the storm is moving) in the Northern Hemisphere is called the _____.
A. windward side
B. leeward side
C. safe semicircle
D. dangerous semicircle
00941. While preparing to enter a Brazilian port, you see ahead a red and green horizontally-striped buoy. The upper band is red. What action should you take?
A. Alter course to leave the buoy to port
B. Alter course to leave the buoy to starboard
C. Pass the buoy close aboard on either side
D. Pass the buoy well clear on either side

00942. Light Lists for coastal waters are _____.
A. published every year and require no corrections
B. published every second year and must be corrected
C. published every five years and require no correction
D. correct only to the date of publication
00944. High clouds, composed of small white flakes or scaly globular masses, and often banded together to form a "mackerel sky", would be classified as _____.
A. cirrus
B. cirrocumulus
C. altocumulus
D. cumulonimbus
00945. Which of the following is NOT a side of the navigational triangle used in sight reduction?
A. Altitude
B. Zenith distance
C. Colatitude
D. Polar distance
00946. The wind circulation around a high pressure center in the Northern Hemisphere is _____.
A. counterclockwise and moving towards the high
B. counterclockwise and moving outward from the high
C. clockwise and moving towards the high
D. clockwise and moving outward from the high
00947. The cold ocean current which meets the warm Gulf Stream between latitudes 40° and 43° N to form the "cold wall" is called the _____.
A. North Cape Current
B. Labrador Current
C. Greenland Current
D. North Atlantic Current
00948. You are hove to in a hurricane on a heading of 328° T. The anemometer indicates that the apparent wind is from 030° relative at 119 knots. How should this be encoded on the weather report form, WS Form B-80 (Illustration D041NG).
A. 88619
B. 87819
C. 8519
D. 80319
00950. Where is the dangerous semicircle located on a hurricane in the Southern Hemisphere?
A. To the left of the storm's track
B. To the right of the storm's track
C. In the high pressure area
D. On the south side

00951. In which of the following countries would you expect the channels to be marked with the IALA-B Buoyage System?
- A. Poland
 - B. Morocco
 - C. Peru
 - D. Saudi Arabia
00952. Which of the following is TRUE concerning new editions of Light Lists?
- A. Supplements to new editions are issued monthly by the U.S. Coast Guard.
 - B. New editions are published by the National Ocean Survey.
 - C. New editions are corrected through the date shown on the title page.
 - D. None of the above
00953. The magnetic compass operates on the principle that _____.
- A. like magnetic poles attract
 - B. unlike magnetic poles repel
 - C. unlike poles attract
 - D. the poles of the compass line up with the geographic poles of the earth
00954. A thin, whitish, high cloud popularly known as "mares tails" is _____.
- A. altostratus
 - B. stratus
 - C. cumulus
 - D. cirrus
00955. The line of position determined from a sight with an observed altitude (Ho) of $88^{\circ}45.0'$ should be _____.
- A. reduced to the meridian and plotted as a latitude line
 - B. calculated as a longitude line
 - C. plotted by using an intercept from an assumed position
 - D. plotted as an arc around the GP of the body
00956. Good weather is usually associated with a region of _____.
- A. low barometric pressure
 - B. high barometric pressure
 - C. falling barometric pressure
 - D. pumping barometric pressure
00957. The Humboldt Current flows in which direction?
- A. North
 - B. South
 - C. East
 - D. West

00958. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). Twenty-five percent of the sky is covered with clouds, and the anemometer indicates that the apparent wind is from 062° relative at 13 knots. You are on course 238° T at 22 knots. How should you encode group Nddff?
- A. 20220
 - B. 20613
 - C. 30219
 - D. 32413
00959. What is the index error of sextant B in illustration D050NG?
- A. 0'30" off the arc
 - B. 1'00" off the arc
 - C. 3'30" off the arc
 - D. 1'30" on the arc
00960. The Light List shows that a navigational light has a nominal range of 15 miles and a height above water of 29 feet. Your height of eye is 52 feet and visibility is 6.0 miles. At what approximate range will you first sight the light?
- A. 9.0 miles
 - B. 11.0 miles
 - C. 14.5 miles
 - D. 15.0 miles
00961. In which of the following countries would you expect the channels to be marked with the IALA-B Buoyage System?
- A. Brazil
 - B. Tanzania
 - C. New Zealand
 - D. Norway
00962. Chart legends which indicate a conspicuous landmark are printed in _____.
- A. underlined letters
 - B. boldfaced print
 - C. italics
 - D. capital letters
00963. To center a compass bowl in its binnacle, you should have the ship on an even keel, heading north or south, and adjust the screws until _____.
- A. the compass heading is in line with the lubber's line
 - B. there is no lost motion in the gimbal rings
 - C. no change of heading by compass is observed if you raise and lower the heeling magnet
 - D. the gimbal rings do not strike the compass frame when they are tilted
00964. The thin, whitish, high clouds composed of ice crystals, popularly known as "mare's tails" are _____.
- A. cirrostratus
 - B. cirrocumulus
 - C. cumulonimbus
 - D. nimbostratus

00965. In order for a star to be used for a sight at lower transit, the star must _____.
A. be circumpolar
B. have a declination equal to or greater than your latitude
C. have a GHA of 180°
D. have the SHA equal to or less than the LHA
00966. Most high pressure areas in the United States are accompanied by _____.
A. precipitation
B. clear, cool weather
C. humid, sticky weather
D. cool fogs
00967. On a voyage from New York to Durban, South Africa, you should expect the Agulhas Current to present a strong _____.
A. offshore set
B. onshore set
C. head current
D. fair or following current
00970. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). The sky is overcast, and the anemometer indicates that the apparent wind is from 144° relative at 8 knots. You are on course 162° T at 15 knots. How should you encode group Nddff?
A. 91521
B. 83322
C. 81408
D. 01615
00971. You are in British waters on course 090° T when you sight a flashing white light with a characteristic of VQ(9)10s. You immediately change course to 030° T. After one hour, you sight another flashing white light with the characteristic of VQ. You must pass well _____.
A. south of this buoy
B. west of this buoy
C. north of this buoy
D. east of this buoy
00972. In which of the following sources could you find the number of a chart for a certain geographic area?
A. Chart No. 1
B. Catalog of Nautical Charts
C. American Practical Navigator
D. U.S. Coast Guard Light List
00973. The heading of a vessel is indicated by what part of the compass?
A. Card
B. Needle
C. Lubber's line
D. Gimbals

00974. Which of the following clouds commonly produce a halo about the Sun or Moon?
- A. Cirrostratus
 - B. Cirrocumulus
 - C. Altostratus
 - D. Altocumulus
00975. The change in the length of the day becomes greater as latitude increases because of the _____.
- A. path of the ecliptic relative to the equator
 - B. decreasing distance between meridians
 - C. changing distance between the Earth and the Sun
 - D. increased obliquity of the Sun's diurnal circle
00976. The atmosphere in the vicinity of a high pressure area is called a(n) _____.
- A. anticyclone
 - B. cold front
 - C. occluded front
 - D. cyclone
00977. In the Sargasso Sea there are large quantities of seaweed and no well defined currents. This area is located in the _____.
- A. Central North Atlantic Ocean
 - B. Caribbean Sea
 - C. Western North Pacific Ocean
 - D. area off the west coast of South America
00978. The wind velocity is higher in the dangerous semicircle of a typhoon because of the _____.
- A. recurvature effect
 - B. extension of the low pressure ridge
 - C. wind circulation and forward motion of the storm
 - D. direction of circulation and pressure gradient
00979. What kind of conditions would you observe as the eye of a storm passes over your vessel's position?
- A. Huge waves approaching from all directions, clearing skies, light winds and an extremely low barometer
 - B. Flat calm seas, heavy rain, light winds and an extremely low barometer
 - C. Flat calm seas, heavy rain, light winds and high pressure
 - D. Huge waves approaching from all directions, clearing skies, light winds and high pressure
00981. The characteristic of a lighted cardinal mark may be _____.
- A. very quick flashing
 - B. flashing
 - C. fixed
 - D. occulting

00982. The Defense Mapping Agency Hydrographic Center's List of Lights for coasts other than the United States and its possessions does NOT provide information on _____.
A. lighted buoys in harbors
B. storm signal stations
C. radio direction finder stations at or near lights
D. radio beacons located at or near lights
00983. Error may be introduced into a magnetic compass by _____.
A. making a structural change to the vessel
B. a short circuit near the compass
C. nylon clothing
D. Any of the above
00984. The bases of middle clouds are located at altitudes of between _____.
A. 3,000 to 6,500 feet
B. 6,500 to 20,000 feet
C. 10,000 to 35,000 feet
D. 20,000 to 60,000 feet
00985. A time diagram is a diagram on the plane of the _____.
A. celestial meridian
B. celestial equator
C. celestial horizon
D. principal vertical circle
00986. A warm air mass is characterized by _____.
A. stability
B. instability
C. gusty winds
D. good visibility
00987. Which of the following currents is responsible for the movement of icebergs into the North Atlantic shipping lanes?
A. Iceland Current
B. Baltic Current
C. Labrador Current
D. Baffin Current
00988. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). One-half of the sky is covered with clouds, and the anemometer indicates that the apparent wind is from 340° relative at 14 knots. You are on course 307° T at 12.6 knots. How should you encode group Nddff?
A. 53414
B. 54013
C. 42205
D. 43013

00989. The Light List shows that a navigational light has a nominal range of 18 miles and a height above water of 22 feet. Your height of eye is 16 feet and the visibility is 2.0 miles. At what approximate range will you first sight the light?
- A. 2.0 miles
 - B. 2.7 miles
 - C. 4.2 miles
 - D. 5.8 miles
00991. You are underway in the North Sea on course 328° T when you sight a buoy broad on your port bow. You are in the best navigable water if the buoy _____.
- A. has a topmark of two cones with points down
 - B. is a western quadrant buoy
 - C. is painted yellow on the top half and black on the bottom
 - D. exhibits a light with the characteristic of VQ(3)5s
00992. What publication contains information on Loran, Decca, and Consol systems?
- A. Pub. 117, Radio Navigational Aids
 - B. Appropriate volume of the Sailing Directions
 - C. Pub. 102, International Code of Signals
 - D. Light List
00993. When crossing the magnetic equator the _____.
- A. Flinders bar should be inverted
 - B. heeling magnet should be inverted
 - C. the quadrantal spheres should be rotated 180°
 - D. Flinders bar should be moved to the opposite side of the binnacle
00994. Which of the following lists clouds, in sequence, from highest in the sky to lowest in the sky?
- A. Altostratus, cirrostratus, stratus
 - B. Cirrostratus, altostratus, stratus
 - C. Stratus, cirrostratus, altostratus
 - D. Altostratus, stratus, cirrostratus
00995. What is the equivalent of 83°29.6' in time units?
- A. 5h 47m 34.8s
 - B. 5h 18m 22.7s
 - C. 5h 01m 42.3s
 - D. 5h 33m 58.4s
00996. Warm air masses will generally have _____.
- A. turbulence within the mass
 - B. stratiform clouds
 - C. heavy precipitation
 - D. good visibility
00997. A coastal current _____.
- A. is generated by waves striking the beach
 - B. flows outside the surf zone
 - C. flows in a circular pattern
 - D. is also known as a longshore current

00998. The navigable semicircle of a tropical storm in the South Indian Ocean is located on which side of the storm's track?
- A. Rear
 - B. Front
 - C. Left
 - D. Right
00999. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). Three-quarters of the sky is covered with clouds, and the anemometer indicates that the apparent wind is from 226° relative at 17.7 knots. You are on course 020° T at 8 knots. How should you encode group Nddff?
- A. 80208
 - B. 72218
 - C. 72318
 - D. 62324
01001. While steaming in English waters on course 280° T, you sight a buoy showing a very quick-flashing (VQ) white light well to port. Maintaining course, you sight another buoy showing a quick-flashing (Q) white light. You should pass _____.
- A. north of the buoy
 - B. west of the buoy
 - C. east of the buoy
 - D. south of the buoy
01002. What publication contains information about the port facilities in Cadiz, Spain?
- A. World Port Index
 - B. United States Coast Pilot
 - C. Nautical Index
 - D. Sailing Directions
01003. The quadrantal spheres are used to _____.
- A. remove deviation on the intercardinal headings
 - B. remove deviation on the cardinal compass headings
 - C. remove heeling error
 - D. compensate for induced magnetism in vertical soft iron
01004. A low, uniform layer of cloud resembling fog, but not resting on the ground, is called _____.
- A. cumulus
 - B. nimbus
 - C. stratus
 - D. cirrus
01005. The refraction correction table given in the Nautical Almanac is based on a standard or average atmospheric density with a temperature of 50° F and atmospheric pressure of _____.
- A. 29.72 inches
 - B. 29.83 inches
 - C. 29.89 inches
 - D. 29.93 inches

01006. An air mass is termed "warm" if _____.
- A. it is above 70° F
 - B. the ground over which it moves is cooler than the mass
 - C. it originated in a high pressure area
 - D. it originated in a low pressure area
01007. When a current flows in the opposite direction to the waves, the wave _____.
- A. length is increased
 - B. height is increased
 - C. velocity increases
 - D. length is unchanged
01008. The Light List indicates that a light has a nominal range of 18 miles and is 38 feet high. If the visibility is 6 miles and your height of eye is 15 feet, at what distance will you sight the light?
- A. 18.0 miles
 - B. 12.8 miles
 - C. 11.7 miles
 - D. 6.0 miles
01009. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). The dry bulb thermometer reads 34° F, and the wet bulb thermometer reads 31° F. How would you encode the air temperature groups in the report?
- A. 10340, 2127/
 - B. 10111, 2010/
 - C. 10011, 2101/
 - D. 10340, 2031/
01010. Which of the following is a characteristic of a rhumb line?
- A. It is the shortest distance between two points on the Earth.
 - B. It plots as a straight line on a Lambert conformal chart.
 - C. It cuts each meridian at the same angle.
 - D. The course angle constantly changes to form the loxodromic curve.
01011. You are underway in the North Sea on course 127° T. You sight a buoy with the topmarks indicated in illustration D025NG bearing two points on the starboard bow. What action must be taken?
- A. Alter course to starboard until the buoy is at least two points on the port bow, then hold course
 - B. Alter course to port until the buoy is broad on the starboard quarter, then hold course
 - C. Change course to have the buoy close aboard either side
 - D. Ensure the bearings change to the right
01012. General information about the location, characteristics, facilities and services for U.S. and foreign ports may be obtained from which of the following publications?
- A. World Port Index
 - B. Sailing Directions
 - C. Distances Between Ports
 - D. Coast Pilot

01013. The purpose of the soft iron spheres mounted on arms on the binnacle is to compensate for _____.
A. the vertical component of the permanent magnetism of the vessel
B. the residual deviation
C. magnetic fields caused by electrical currents in the vicinity
D. induced magnetism in the horizontal soft iron
01014. Relative humidity is the percentage of water vapor that is in the air as compared to the maximum amount it can hold at _____.
A. a specific barometric pressure
B. a specific temperature
C. a specific wind speed
D. any time
01015. Which statement about the time diagram in illustration D005NG is correct?
A. The Greenwich hour angle of the Sun is greater than 180'.
B. The meridian angle of the Sun is labeled west.
C. The date of Greenwich is the day after the date for observer at M.
D. The Sun has already passed the lower branch of the observer's meridian.
01016. A source of an air mass labeled mTw is _____.
A. the equator
B. the Gulf of Mexico
C. Alaska
D. Canada
01017. Which statement(s) concerning the Coriolis force on ocean currents is(are) correct?
A. The deflection of the current is to the left in the Northern Hemisphere.
B. The Coriolis force is greater in the lower latitudes.
C. The Coriolis force is more effective in deep water.
D. All of the above
01018. An aneroid barometer reading should be corrected for differences in _____.
A. elevation
B. temperature
C. wind speed
D. latitude
01019. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). The dry bulb thermometer reads 30° F, and the wet bulb thermometer reads 28° F. How would you encode the air temperature groups in the report?
A. 10011, 2003/
B. 11300, 2124/
C. 11011, 2124/
D. 11011, 2103/

01020. The Light List shows that a navigational light has a nominal range of 6 miles and a height above water of 18 feet. Your height of eye is 40 feet and the visibility is 27.0 miles. At what approximate range will you first sight the light?
- A. 5.6 miles
 - B. 6.0 miles
 - C. 9.0 miles
 - D. 12.1 miles
01021. You are underway in the North Sea on course 142° T when you sight a buoy bearing 105° T. The buoy's white light has a characteristic of continuous very-quick flashing. To ensure that your vessel remains in the best navigable water you would _____.
- A. continue on course and ensure that the bearings change to the left
 - B. pass between the buoy and another buoy showing a fixed white light
 - C. alter course to port and pass the buoy close aboard to either side
 - D. alter course to port and pass north of the buoy
01022. What is the approximate geographic range of Machias Seal Island Light, Canada, if your height of eye is 38 feet?
- A. 24.8 miles
 - B. 17.8 miles
 - C. 15.9 miles
 - D. 10.3 miles
01023. Which of the following will compensate for induced magnetism in the horizontal soft iron of a vessel?
- A. Iron spheres mounted on the binnacle
 - B. A single vertical magnet under the compass
 - C. The Flinders bar
 - D. Magnets in trays inside the binnacle
01024. The dew point is reached when the _____.
- A. temperature of the air equals the temperature of the seawater
 - B. atmospheric pressure is 14.7 lbs. per square inch
 - C. relative humidity reaches 50%
 - D. air becomes saturated with water vapor
01025. A first magnitude star is _____.
- A. 2.5 times as bright as a second magnitude star
 - B. 3 times as bright as a second magnitude star
 - C. 5 times as bright as a second magnitude star
 - D. 10 times as bright as a second magnitude star
01026. An air mass that has moved down from Canada would most likely have the symbols _____.
- A. mPk
 - B. cPk
 - C. cTk
 - D. cTw

01027. In the Northern Hemisphere the major ocean currents tend to flow _____.
- A. clockwise around the North Atlantic and North Pacific Oceans
 - B. clockwise or counterclockwise depending on whether it is warm or cold current
 - C. counterclockwise except in the Gulf Stream
 - D. counterclockwise around the North Atlantic and North Pacific Oceans
01028. At what angle to the isobars do surface winds blow over the open sea?
- A. About 90°
 - B. About 50°
 - C. About 25°
 - D. About 15°
01029. Which of the following would be the subject of a NAVAREA warning?
- A. A drifting buoy sighted in mid-ocean
 - B. Extinguishment of Wolf Trap Light located inside Chesapeake Bay
 - C. All military exercises on the high seas involving four or more vessels
 - D. Off-air times of radio beacons when scheduled for routine maintenance
01030. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). The dry bulb thermometer reads 78° F, and the wet bulb thermometer reads 75° F. How would you encode the air temperature groups in the report?
- A. 10256, 2023/
 - B. 10780, 2074/
 - C. 00256, 0023/
 - D. 10256, 2074/
01031. While steaming north of the Irish coast, you sight a buoy which shows the light rhythm shown in illustration D028NG. How would you pass this buoy?
- A. North of the buoy
 - B. East of the buoy
 - C. South of the buoy
 - D. West of the buoy
01032. What is the approximate geographic range of Great Duck Island Light, ME, if your height of eye is 62 feet?
- A. 9.4 nm
 - B. 16.2 nm
 - C. 18.4 nm
 - D. 20.2 nm
01033. Deviation which is maximum on intercardinal compass headings may be removed by the _____.
- A. Flinders bar
 - B. transverse magnets
 - C. fore-and-aft magnets
 - D. soft iron spheres on the sides of the compass

01034. The expression "the air is saturated" means _____.
A. the relative humidity is 100%
B. the vapor pressure is at its minimum for the prevailing temperature
C. precipitation has commenced
D. cloud cover is 100%
01035. The approximate positions of the stars are based on sidereal time, which is based upon rotation of the Earth relative to _____.
A. winter solstice
B. autumnal equinox
C. summer solstice
D. vernal equinox
01036. A frontal thunderstorm is caused by _____.
A. pronounced local heating
B. wind being pushed up a mountain
C. a warm air mass rising over a cold air mass
D. an increased lapse rate caused by advection of warm surface air
01037. Generally speaking, a ship steaming across the North Pacific from Japan to Seattle is likely to experience _____.
A. adverse currents for practically the entire crossing
B. favorable currents for practically the entire crossing
C. favorable currents in the summer months and adverse currents in the winter months
D. variable currents having no significant effect on the total steaming time
01038. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). The dry bulb thermometer reads 54° F, and the wet bulb thermometer reads 50° F. How would you encode the air temperature groups in the report?
A. 1054/, 2050/
B. 10122, 2008/
C. 1054/, 2047/
D. 054//, 047//
01039. While taking weather observations, you determine that the wind is coming from the west. In the weather log, you would record the wind direction as _____.
A. 000°
B. 090°
C. 180°
D. 270°
01040. An occluded front is usually caused by a _____.
A. cold front becoming stationary
B. warm front becoming stationary
C. cold front overtaking a warm front
D. warm front dissipating

01041. You are steaming along the coast of Ireland in the Irish Sea. You sight a lighted buoy with a white flashing light showing a group of two flashes. The buoy indicates you _____.
- A. must pass south of the buoy
 - B. must pass north of the buoy
 - C. should pass well clear on either side of the buoy
 - D. must pass the buoy close to starboard
01042. What is the approximate geographic range of Mount Desert Light, ME, if your height of eye is 24 feet?
- A. 8.7 miles
 - B. 9.9 miles
 - C. 14.4 miles
 - D. 15.5 miles
01043. You are about to go to sea and adjust the magnetic compass. To expedite the adjustment at sea, in what order should the following dockside adjustments be made?
- A. Flinders bar first, then the heeling magnet and spheres
 - B. Heeling magnet first, then the Flinders bar and spheres
 - C. Flinders bar first, then the spheres and heeling magnet
 - D. Spheres first, then the Flinders bar and heeling magnet
01044. The dry-bulb temperature is 78° F and the wet-bulb temperature is 62° F. What is the relative humidity?
- A. 16%
 - B. 24%
 - C. 39%
 - D. 79%
01045. The Light List shows that a navigational light has a nominal range of 15 miles and a height above water of 40 feet. Your height of eye is 25 feet and the visibility is 5.0 miles. At what approximate range will you first sight the light?
- A. 6.2 miles
 - B. 9.5 miles
 - C. 12.9 miles
 - D. 14.2 miles
01046. The probability of a sudden wind may be foretold by _____.
- A. a partly cloudy sky
 - B. an overcast sky
 - C. a fast approaching line of dark clouds
 - D. the formation of cumulus clouds in the sky
01047. Which is NOT a contributing cause of ocean currents?
- A. Surface winds
 - B. Density differences in the water
 - C. Underwater topography
 - D. Gravitational effects of celestial bodies

01049. At 0000 you fix your position and change course to 270° T. At 0030 you again fix your position, and it is 0.5 mile east of your DR. Which of the following statements is TRUE?
- A. The set is 090°, drift 0.5 knot.
 - B. The set is 090°, drift 1.0 knot.
 - C. The set is 270°, drift 0.5 knot.
 - D. The set is 270°, drift 1.0 knot.
01050. The passing of a low pressure system can be determined by periodically checking the _____.
- A. thermometer
 - B. hygrometer
 - C. barometer
 - D. anemometer
01051. Under the IALA-A and B Buoyage Systems, a cardinal mark may NOT be used to _____.
- A. indicate that the deepest water in an area is on the named side of the mark
 - B. indicate the safe side on which to pass a danger
 - C. draw attention to a feature in the channel such as a bend, junction, bifurcation, or end of a shoal
 - D. indicate the port and starboard sides of well-defined channels
01052. What is the approximate geographic range of Eastern Point Light, MA, in nautical miles if your height of eye is 32 feet?
- A. 15.5
 - B. 13.4
 - C. 8.7
 - D. 6.9
01053. Before a magnetic compass is adjusted certain correctors must be checked to ensure that they are free of permanent magnetism. These correctors are the _____.
- A. fore-and-aft and athwartships magnets
 - B. dip needle and heeling magnet
 - C. heeling magnet and Flinders bar
 - D. Flinders bar and quadrantal spheres
01054. The dry-bulb temperature is 78° F and the wet-bulb temperature is 68° F. What is the relative humidity?
- A. 10%
 - B. 24%
 - C. 56%
 - D. 60%
01055. The radius of a circle of equal altitude for a body equals the body's _____.
- A. declination
 - B. polar distance
 - C. altitude
 - D. zenith distance

01056. The steepness of a cold front depends on _____.
A. the direction of wind around the front
B. its velocity
C. the temperature of the air behind the front
D. the precipitation generated by the front
01057. One of the causes of ocean currents is density differences in the water. This is true because _____.
A. in an area of high density the water's surface is lower than in an area of low density
B. surface water flows from an area of high density to one of low density
C. the lesser the density gradient the freer the water is to move
D. it is the density differences that cause the currents to stay in the troughs
01058. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). Your position is LAT 64°42' N, LONG 02°28' W. How would this be encoded?
A. 90647, 90024
B. 0647N, 00025
C. 99647, 70024
D. 9064N, 9025W
01059. The Light List shows that a navigational light has a nominal range of 17 miles and a height above water of 28 feet. Your height of eye is 32 feet and the visibility is 11.0 miles. At what approximate range will you first sight the light?
A. 11.0 miles
B. 12.6 miles
C. 15.7 miles
D. 18.0 miles
01060. Isobars on a synoptic chart are useful in predicting _____.
A. temperature
B. dew point
C. wind velocity
D. relative humidity
01061. In waters where the IALA cardinal system is used you would expect to find danger _____.
A. lying to the south of an eastern quadrant buoy
B. lying to the south of a northern quadrant buoy
C. lying to the east of an eastern quadrant buoy
D. beneath or directly adjacent to the buoy
01062. What is the approximate geographic range of Boston Light, MA, if your height of eye is 40 feet?
A. 18.8 miles
B. 19.6 miles
C. 20.3 miles
D. 24.8 miles

01063. When adjusting a magnetic compass using the fore-and-aft permanent magnets, you should _____.
- A. use the magnets one at a time, putting one in one side and then one on the opposite side, one step higher.
 - B. use the magnets in pairs, starting at the top, with trays at the highest point of travel
 - C. use the magnets in pairs, from the bottom up, with the trays at the lowest point of travel
 - D. fill all the trays with magnets, then remove them one-by-one until the deviation is removed
01064. The dew point temperature is _____.
- A. always higher than the air temperature
 - B. always lower than the air temperature
 - C. equal to the difference between the wet and dry bulb temperatures
 - D. the temperature at which the air is saturated with water vapor
01065. You are in the Northern Hemisphere and a tropical wave is located 200 miles due east of your position. Where will the wave be located 12 hours later?
- A. Farther away to the east
 - B. In the same position
 - C. Nearby to the east
 - D. Farther away to the west
01066. The slope of a warm front is about _____.
- A. 1 mile vertically to 10 miles horizontally
 - B. 1 mile vertically to 50 miles horizontally
 - C. 1 mile vertically to 150 miles horizontally
 - D. 1 mile vertically to 500 miles horizontally
01067. The two most effective generating forces of surface ocean currents are _____.
- A. temperature and salinity differences in the water
 - B. wind and density differences in the water
 - C. water depth and underwater topography
 - D. rotation of the Earth and continental interference
01069. What do the numbers on isobars indicate?
- A. barometric pressure
 - B. temperature
 - C. rain in inches
 - D. wind speed
01071. A cardinal mark showing an uninterrupted quick-flashing white light indicates the deepest water in the area is on the _____.
- A. north side of the mark
 - B. west side of the mark
 - C. east side of the mark
 - D. south side of the mark

01072. What is the approximate geographic range of Assateague Light, VA, if your height of eye is 52 feet?
- A. 14.1 nm
 - B. 21.8 nm
 - C. 22.6 nm
 - D. 50.2 nm
01074. As the temperature for a given mass of air increases, the _____.
- A. dew point increases
 - B. dew point decreases
 - C. relative humidity increases
 - D. relative humidity decreases
01075. The expression "first magnitude" is usually used to refer only to bodies of magnitude _____.
- A. 1.5 and greater
 - B. 1.25 and greater
 - C. 1.0 and greater
 - D. 0.5 and greater
01076. Which is TRUE concerning the speed of fronts?
- A. Cold fronts move faster than warm fronts.
 - B. Cold fronts move slower than warm fronts.
 - C. Cold fronts and warm fronts move with equal speed.
 - D. Cold fronts move slower at the northern end and faster at the southern end.
01077. A current will develop between areas of different density in ocean waters. If you face in the same direction the current is flowing, the water of _____.
- A. high density will be on the left in the Northern Hemisphere
 - B. high density will be on the right in the Southern Hemisphere
 - C. low density will be on the left in the Northern Hemisphere
 - D. low density will be on the left in the Southern Hemisphere
01081. On a voyage along the coast of France, you sight a buoy with the top marks shown in illustration D026NG. You are required to steer _____.
- A. west of the buoy
 - B. east of the buoy
 - C. south of the buoy
 - D. north of the buoy
01083. Magnets are placed in horizontal trays in the compass binnacle to compensate for the _____.
- A. induced magnetism in the vessel's horizontal soft iron
 - B. change in the magnetic field when the vessel inclines from vertical
 - C. permanent magnetism of the vessel
 - D. magnetic fields caused by electrical currents in the vicinity
01084. As the temperature of a given mass of air decreases, the _____.
- A. absolute humidity decreases
 - B. relative humidity increases
 - C. specific humidity decreases
 - D. dew point rises

01086. When crossing a front isobars tend to _____.
A. change from smooth curves within the air mass to sharp bends at the front
B. change from sharp bends within the air mass to smooth curves at the front
C. pass smoothly across the front with no change
D. become closer together at the front and pass through in straight lines
01087. The velocity of a rotary tidal current will increase when the Moon is _____.
A. new
B. full
C. at perigee
D. All of the above
01088. Which of the following statements about an estimated position is TRUE?
A. It is more reliable than a fix based on radar bearings.
B. It may be based on a single LOP or questionable data.
C. When a 3-LOP fix plots in a triangle, the center of the triangle is the estimated position.
D. It is usually based on soundings.
01089. You are enroute to assist vessel A. Vessel A is underway at 5.5 knots on course 033° T, and bears 248° T at 64 miles from you. What is the course to steer at 13 knots to intercept vessel A?
A. 262°
B. 269°
C. 276°
D. 281°
01090. Referring to illustration D049NG, what weather conditions would you expect to find at position A?
A. Winds NW-W at 20 knots, heavy rain, and high seas
B. Light northerly winds, partly cloudy, and high seas
C. Winds calm, light rain, and calm seas
D. Winds NE-E at 20 knots, heavy rain, and high seas
01091. The cardinal mark topmark shown in illustration D024NG represents which quadrant?
A. Northern
B. Eastern
C. Southern
D. Western
01093. The Flinders bar on a magnetic compass compensates for the _____.
A. induced magnetism in vertical soft iron
B. induced magnetism in horizontal soft iron
C. permanent magnetism in ship's steel
D. vessel's inclination from the vertical

01094. A light, feathery deposit of ice caused by the sublimation of water vapor directly into the crystalline form, on objects whose temperatures are below freezing, is known as _____.
- A. dew
 - B. frost
 - C. glaze
 - D. snow
01095. The celestial coordinate of a star that is relatively constant in value is the _____.
- A. Greenwich hour angle
 - B. local hour angle
 - C. sidereal hour angle
 - D. meridian angle
01096. With the passage of an occluded front the temperature _____.
- A. rises rapidly
 - B. remains about the same
 - C. drops rapidly
 - D. depends on whether warm type or cold type occlusion
01097. The velocity of a rotary tidal current will be decreased when the Moon is _____.
- A. at apogee
 - B. new
 - C. full
 - D. Any of the above
01101. In the North Sea area, you sight a buoy showing an uninterrupted quick-flashing white light. Which of the four topmarks shown in illustration D031NG would this buoy be fitted with under the IALA-A Buoyage systems?
- A. A
 - B. B
 - C. C
 - D. D
01102. What is the approximate geographic range of Mount Desert Light, ME, if your height of eye is 27 feet?
- A. 9.9 miles
 - B. 14.3 miles
 - C. 16.2 miles
 - D. 17.4 miles
01103. The vertical component of the Earth's magnetic field causes induced magnetism in vertical soft iron. This changes with latitude. When you are adjusting a compass, what corrects for this coefficient of the deviation?
- A. The Flinders bar
 - B. The heeling magnet
 - C. Quadrantal soft iron spheres
 - D. Bar magnets in the binnacle

01104. Which condition(s) is(are) necessary for the formation of dew?
- A. Clear skies
 - B. Calm air
 - C. Earth's surface cooler than the air
 - D. All of the above
01105. The Light List shows that a navigational light has a nominal range of 22 miles and a height above water of 48 feet. Your height of eye is 35 feet and the visibility is 20.0 miles. At what approximate range will you first sight the light?
- A. 10.5
 - B. 13.2
 - C. 14.7
 - D. 32.0
01106. The legend symbol which designates an occluded front is represented by a _____.
- A. red line
 - B. purple line
 - C. blue line
 - D. dashed blue line
01107. A rotary current sets through all directions of the compass. The time it takes to complete one of these cycles is approximately _____.
- A. 2 1/2 hours
 - B. 3 1/2 hours
 - C. 6 1/2 hours
 - D. 12 1/2 hours
01108. Preferred channel buoys indicate the preferred channel to transit by _____.
- A. odd or even numbers
 - B. the color of their top band
 - C. the location of the buoy in the channel junction
 - D. the characteristic of the buoy's light
01109. You are on course 146° T. To check the speed of your vessel you should observe a celestial body on which bearing?
- A. 000°
 - B. 056°
 - C. 090°
 - D. 146°
01111. Black double-cone topmarks are the most important feature, by day, of cardinal marks. Which of the four topmarks shown in illustration D030NG indicates the best navigable water lies to the west of the buoy?
- A. A
 - B. B
 - C. C
 - D. D

01113. A single vertical magnet placed underneath the compass in the binnacle is used to compensate for _____.
- A. the horizontal component of the permanent magnetism
 - B. deviation caused by the vessel's inclination from the vertical
 - C. induced magnetism in the horizontal soft iron
 - D. induced magnetism in the vertical soft iron
01114. Mechanical lifting of air by the upslope slant of the terrain is called _____.
- A. vertical lifting
 - B. convective lifting
 - C. advective lifting
 - D. topographic lifting
01116. When a cold air mass and a warm air mass meet, and there is no horizontal motion of either air mass, it is called a(n) _____.
- A. cold front
 - B. occluded front
 - C. stationary front
 - D. warm front
01117. A rotary current sets through all directions of the compass. The time it takes to complete one of these cycles is approximately _____.
- A. 3 hours
 - B. 6 1/2 hours
 - C. 12 1/2 hours
 - D. 25 hours
01120. You are on course 042° T. To check the course of your vessel you should observe a celestial body on which bearing?
- A. 090°
 - B. 132°
 - C. 180°
 - D. 222°
01121. The articulated light is superior to other types of buoys because _____.
- A. the radar reflectors reflect better signals
 - B. fog horn signals travel farther to sea
 - C. they are equipped with strobe lights
 - D. it has a reduced watch circle
01122. A barometer showing falling pressure would indicate the approach of a _____.
- A. high pressure system
 - B. low pressure system
 - C. high dew point
 - D. low dew point
01123. Which of the following are the only magnetic compass correctors that correct for both permanent and induced effects of magnetism?
- A. Quadrantal spheres
 - B. Heeling magnets
 - C. Athwartships magnets
 - D. Fore-and-aft magnets

01124. The region containing 3/4 of the mass of the atmosphere and the region to which are confined such phenomena as clouds, storms, precipitation and changing weather conditions is called _____.
- A. stratosphere
 - B. troposphere
 - C. stratopause
 - D. tropopause
01125. The Light List shows that a navigational light has a nominal range of 19 miles and a height above water of 52 feet. Your height of eye is 42 feet and the visibility is 10.0 miles. At what approximate range will you first sight the light?
- A. 10.0 miles
 - B. 15.7 miles
 - C. 16.5 miles
 - D. 19.0 miles
01126. When a warm air mass is adjacent to a cold air mass, the separation line between the two is called a(n) _____.
- A. front
 - B. isobar
 - C. isotherm
 - D. equipotential line
01127. In a river subject to tidal currents, the best time to dock a ship without the assistance of tugs is _____.
- A. at slack water
 - B. at stand
 - C. when there is a following current
 - D. at high water
01128. In 1981, when would Jupiter and Saturn be visible in temperate latitudes for both evening and morning stars?
- A. 10 January
 - B. 27 March
 - C. 22 June
 - D. 8 October
01129. When running free in light airs, the personnel in a lifeboat under sail should be distributed so that _____.
- A. the boat is trimmed by the bow
 - B. the boat has no trim
 - C. the boat is trimmed by the stern
 - D. the trim, either by the bow or stern, is not excessive
01131. What is the meaning of "Fl (2+1)" in conjunction with navigational aids?
- A. A flashing light varied at regular intervals by a fixed light of greater brilliance
 - B. Light flashes are combined in alternating groups, with a different number of flashes in each group
 - C. A light showing groups of two or more flashes at regular intervals
 - D. A fixed light varied at regular intervals by groups of two or more flashes of greater brilliance

01133. Which of the following compensates for errors introduced when the vessel heels over?
- A. The soft iron spheres on the arms of the binnacle
 - B. Magnets placed in trays inside the binnacle
 - C. A single vertical magnet beneath the compass
 - D. The Flinder's bar
01134. The Earth's irregular heating is caused by _____.
- A. the time of day
 - B. the seasons
 - C. geography
 - D. All of the above
01135. A position on the Earth has a longitude of 74°10' E. Its celestial counterpart would have a _____.
- A. GHA of 285°50'
 - B. SHA of 74°10'
 - C. SHA of 285°50'
 - D. LHA of 74°10' E
01136. When a warm air mass overtakes a retreating cold air mass, the contact surface is called a(n) _____.
- A. warm front
 - B. cold front
 - C. line squall
 - D. occluded front
01137. When the declination of the Moon is 0°12.5' S, you can expect some tidal currents in Gulf Coast ports to _____.
- A. become weak and variable
 - B. exceed the predicted velocities
 - C. become reversing currents
 - D. have either a double ebb or a double flood
01138. On approaching the English Channel on course 080° T, you note the symbol YBY near a charted buoy. You must pass _____.
- A. northward of the buoy
 - B. southward of the buoy
 - C. eastward of the buoy
 - D. westward of the buoy
01139. A star is observed at lower transit. The line of position derived from this sight is _____.
- A. on the prime vertical
 - B. a latitude line
 - C. a longitude line
 - D. of no special significance
01140. What is the light characteristic of a lighted, preferred-channel buoy?
- A. Group-flashing
 - B. Composite group-flashing
 - C. Interrupted quick-flashing
 - D. Fixed and flashing

01141. Which of the following is characteristic of an isophase light?
- A. 4 sec. flash, 2 sec. eclipse, 3 sec. flash, 2 sec. eclipse
 - B. 2 sec. flash, 5 sec. eclipse
 - C. 1 sec. flash, 1 sec. eclipse
 - D. 6 sec. flash, 3 sec. eclipse
01142. Referring to illustration D049NG, what weather conditions would you expect to find at position B?
- A. Winds NW at 20.5 knots, steady warm temperatures, high seas
 - B. Winds calm, falling temperatures, clear skies, high seas
 - C. Winds S-SE at 25 knots, falling temperatures, squally, high seas
 - D. None of the above
01143. What is used to correct for both induced and permanent magnetism, and consequently must be readjusted with radical changes in latitude?
- A. Flinders bar
 - B. Soft iron spheres
 - C. Fore-and-aft permanent magnets in their trays
 - D. Heeling magnet
01144. Freezing salt water spray should be anticipated when the air temperature drops below what maximum value?
- A. 32° F
 - B. 28° F
 - C. 0° F
 - D. -40° F
01145. The GHA of a star _____.
- A. increases at a rate of approximately 15° per hour
 - B. increases at a rate of approximately 4° per hour
 - C. decreases at a rate of approximately 15° per hour
 - D. decreases at a rate of approximately 4° per hour
01146. Which of the following about a front is TRUE?
- A. It is a boundary between two air masses.
 - B. There are temperature differences on opposite sides of a front.
 - C. There are abrupt pressure differences across a front.
 - D. All of the above
01147. To make sure of getting the full advantage of a favorable current, you should reach an entrance or strait at what time in relation to the predicted time of the favorable current?
- A. One hour after
 - B. At the predicted time
 - C. 30 minutes before
 - D. 30 minutes before flood, one hour after an ebb
01148. The numeral in the center of a wind rose circle on a pilot chart indicates the _____.
- A. total number of observations
 - B. average wind force on the Beaufort scale
 - C. average wind force in knots
 - D. percentage of calms

01150. You are on course 312° T. To check the speed of your vessel you should observe a celestial body on which bearing?
- A. 312°
 - B. 000°
 - C. 090°
 - D. 222°
01151. Buoys are marked with reflective material to assist in their detection by searchlight. Which of the following statements is TRUE?
- A. A safe-water buoy will display red and white vertical stripes of reflective material.
 - B. All reflective material is white because it is the most visible at night.
 - C. A special-purpose mark will display either red or green reflective material to agree with its shape.
 - D. A preferred-channel buoy displays either red or green reflective material to agree with the top band of color.
01153. Heeling error is defined as the change of deviation for a heel of _____.
- A. 2° while the vessel is on an intercardinal heading
 - B. 1° while the vessel is on a compass heading of 000°
 - C. 2° and is constant on all headings
 - D. 1° while the vessel is on a compass heading of 180°
01154. The speed at which an ocean wave system advances is called _____.
- A. wave length
 - B. ripple length
 - C. group velocity
 - D. wave velocity
01156. When cold air displaces warm air you have a(n) _____.
- A. cold front
 - B. occluded front
 - C. stationary front
 - D. warm front
01157. How many slack tidal currents usually occur each day?
- A. One
 - B. Two
 - C. Three
 - D. Four
01158. What type of cloud is indicated by the number 5 in illustration D039NG?
- A. Cirrostratus
 - B. Cirrocumulus
 - C. Altocumulus
 - D. Nimbostratus

01159. Two navigational hazards are located near to each other, but each is marked by an individual cardinal buoyage system. The buoys of one cardinal system may be identified from the other system by _____.
- A. the differing light colors
 - B. one system having odd numbers while the other system has even numbers
 - C. one system using horizontal bands while the other system uses vertical stripes
 - D. the difference in the periods of the light
01160. Referring to illustration D049NG, what change in the wind could be expected at position C if the flow of high pressure was in a northerly direction?
- A. Decreasing and shifting to the east
 - B. Decreasing and shifting to the north
 - C. Increasing with no change of direction
 - D. Increasing and shifting to the east
01161. Which of the following is characteristic of an occulting light?
- A. 1 sec. flash, 2 sec. eclipse, 1 sec. flash, 5 sec. eclipse
 - B. 5 sec. flash, 5 sec. eclipse
 - C. 4 sec. flash, 2 sec. eclipse, 3 sec. flash, 2 sec. eclipse
 - D. 6 sec. flash, 6 sec. eclipse
01162. A line of all possible positions of your vessel at any given time is a _____.
- A. longitude line
 - B. latitude line
 - C. line of position
 - D. fix
01163. The total magnetic effects which cause deviation of a vessel's compass can be broken down into a series of components which are referred to a _____.
- A. divisional parts
 - B. coefficients
 - C. fractional parts
 - D. equations
01164. The largest waves (heaviest chop) will usually develop where the wind blows _____.
- A. at right angles to the flow of the current
 - B. against the flow of the current
 - C. in the same direction as the flow of the current
 - D. over slack water
01166. A series of brief showers accompanied by strong, shifting winds may occur along or some distance ahead of a(n) _____.
- A. upper front aloft
 - B. cyclone
 - C. occluded front
 - D. cold front

01167. The velocity of the current in large coastal harbors is _____.
A. unpredictable
B. predicted in Tidal Current Tables
C. generally constant
D. generally too weak to be of concern
01168. What type of cloud is indicated by the number 4 in illustration D039NG?
A. Altocumulus
B. Cirrostratus
C. Cumulus
D. Altostratus
01169. Illustration D042NG represents the symbols used on radiofacsimile weather charts. The symbol indicated at letter "O" represents _____.
A. sandstorms
B. thunderstorms
C. snow
D. rain showers
01171. A light that has a light period shorter than its dark period is described as _____.
A. flashing
B. pulsating
C. occulting
D. alternating
01172. What position on illustration D049NG would likely have stratus or stratocumulus clouds, occasional light drizzle, steady westerlies around 10 knots, and steady temperatures?
A. B
B. C
C. D
D. E
01173. When correcting a magnetic compass, a deviation table should be made _____.
A. before correcting for any deviation
B. after correcting for variation
C. after adjusting the fore-and-aft and athwartships permanent magnets
D. before the quadrantal correctors are placed on the compass
01174. Your vessel is enroute from Japan to Seattle and is located at position I on the weather map in illustration D013NG. You should experience which of the following weather conditions?
A. Clear skies with warm temperatures
B. Steady precipitation
C. Overcast skies with rising temperature
D. Thundershowers
01175. Solid green arrows on the main body of a pilot chart indicate _____.
A. prevailing wind directions
B. prevailing ocean current directions
C. probable surface current flow
D. shortest great circle routes

01176. After the passage of a cold front, the barometric pressure _____.
- A. drops, and the temperature drops
 - B. drops, and the temperature rises
 - C. rises, and the temperature drops
 - D. rises, and the temperature rises
01177. Which statement is TRUE concerning the current at Caesar Creek, Biscayne Bay, Florida?
- A. Maximum current at Caesar Creek takes place five minutes before maximum current at Miami harbor entrance.
 - B. The velocity of the maximum ebb current is the same as it is at Miami harbor entrance.
 - C. The average velocity of the ebb is greater than the average velocity of the flood.
 - D. There is always a weak and variable current at slack water.
01179. What type of cloud is indicated by the number 3 in illustration D039NG?
- A. Cirrocumulus
 - B. Altocumulus
 - C. Nimbostratus
 - D. Cumulus
01180. You are on course 238° T. To check the course of your vessel you should observe a celestial body on which bearing?
- A. 180°
 - B. 238°
 - C. 328°
 - D. 090°
01181. An occulting light is one in which _____.
- A. the period of darkness exceeds the period of light
 - B. there is only a partial eclipse of the light
 - C. the periods of light and darkness are equal
 - D. the period of light exceeds the period of darkness
01182. Referring to illustration D049NG, what wind speeds are reported in position C?
- A. 3 knots
 - B. 10 knots
 - C. 20 knots
 - D. 30 knots
01183. The principal purpose of magnetic compass adjustment is to _____.
- A. reduce the variation error as much as possible
 - B. reduce the deviation error as much as possible
 - C. reduce the magnetic dip error as much as possible
 - D. allow the compass bowl to swing freely on its gimbals
01184. Your position, X, in illustration D009NG is at LAT 35° S. What winds are you experiencing?
- A. Northeasterly
 - B. Northwesterly
 - C. Southeasterly
 - D. Southwesterly

01186. As a cold front passes an observer, pressure _____.
A. drops and winds become variable
B. rises and winds become gusty
C. drops and winds become gusty
D. rises and winds become variable
01187. Off Barnegat, with the wind coming out of the east, the wind-driven current will be flowing approximately _____.
A. 016°
B. 106°
C. 254°
D. 286°
01190. What type of cloud is indicated by the number 2 in illustration D039NG?
A. Cumulus
B. Cirrostratus
C. Stratocumulus
D. Altostratus
01191. You plot a fix using three lines of position and find they intersect in a triangle. The actual position of the vessel _____.
A. is outside of the triangle
B. may be anywhere in the triangle
C. may be inside or outside of the triangle
D. is the geometric center of the triangle
01192. You are enroute to assist vessel A. Vessel A is underway at 5.5 knots on course 033° T, and bears 284° T at 43 miles from you. What is the course to steer at 16 knots to intercept vessel A?
A. 284°
B. 303°
C. 329°
D. 342°
01193. If a ship is proceeding towards the magnetic equator, the uncorrected deviation due to permanent magnetism _____.
A. increases
B. remains the same
C. decreases
D. is unimportant and may be neglected
01194. In the Northern Hemisphere, an observer at point II in the weather system in illustration D014NG should experience a wind shift from the _____.
A. southwest, clockwise to northwest
B. northeast, clockwise to west-southwest
C. northeast, counterclockwise to northwest
D. east, counterclockwise to south-southwest

01196. In the Northern Hemisphere, gusty winds shifting clockwise, a rapid drop in temperature, thunderstorms or rain squalls in summer (frequent rain/snow squalls in winter) then a rise in pressure followed by clearing skies, indicate the passage of a(n) ____.
- A. warm front
 - B. tropical cyclone
 - C. anticyclone
 - D. cold front
01197. Off Fire Island, with winds from the southwest, the average wind-driven current flows in a direction of ____.
- A. 014°
 - B. 076°
 - C. 170°
 - D. 256°
01198. Illustration D042NG represents the symbols used on radiofacsimile weather charts. Which of these symbols indicates a dust storm?
- A. I
 - B. H
 - C. O
 - D. P
01199. The Sailing Directions (Enroute) contain information on which of the following?
- A. Well-charted inner dangers
 - B. Port facilities
 - C. Coastal anchorages
 - D. Offshore traffic separation schemes
01200. You want to transit Pollock Rip Channel, MA, on 6 April 1983. What is the period of time around the 0955 (ZD +5) slack in which the current does not exceed 0.3 knot?
- A. 0911 to 0955
 - B. 0940 to 1010
 - C. 0955 to 1044
 - D. 0935 to 1017
01201. Which of the following is NOT true concerning color sectors of lights?
- A. Color sectors are expressed in degrees from the light toward the vessel.
 - B. Color sectors may indicate dangerous waters.
 - C. Color sectors may indicate the best water across a shoal.
 - D. Color sectors may indicate a turning point in a channel.
01202. Referring to illustration D049NG, what wind speeds are reported at position A?
- A. 10 knots
 - B. 15 knots
 - C. 20 knots
 - D. 25 knots

01203. If the compass heading and the magnetic heading are the same then _____.
- A. the deviation has been offset by the variation
 - B. there is something wrong with the compass
 - C. the compass is being influenced by nearby metals
 - D. there is no deviation on that heading
01204. Which of the symbols in illustration D018NG designates a stationary front?
- A. A
 - B. B
 - C. C
 - D. D
01205. How is the annual rate of change for magnetic variation shown on a pilot chart?
- A. Gray lines on the uppermost inset chart
 - B. Red lines on the main body of the chart
 - C. In parenthesis on the lines of equal magnetic variation
 - D. Annual rate of change is not shown
01206. Brief, violent showers frequently accompanied by thunder and lightning are usually associated with _____.
- A. passage of a warm front
 - B. passage of a cold front
 - C. winds shifting counterclockwise in the Northern Hemisphere
 - D. stationary high pressure systems
01207. What will be the velocity of tidal current at New London Harbor Entrance, CT, at 1615 EST (ZD +5) on 26 December 1983?
- A. 0.2 knot
 - B. 0.4 knot
 - C. 0.7 knot
 - D. 0.9 knot
01208. What type of cloud is indicated by the number 1 in illustration D039NG?
- A. Cirrus
 - B. Altostratus
 - C. Altocumulus
 - D. Nimbostratus
01209. You are on course 201° T. To check the speed of your vessel you should observe a celestial body on which bearing?
- A. 090°
 - B. 111°
 - C. 180°
 - D. 201°
01211. Red sectors of navigation lights warn mariners of _____.
- A. floating debris
 - B. heavily trafficked areas
 - C. recently sunken vessels
 - D. shoals or nearby land

01212. Range daymarks may be painted any of the following colors EXCEPT _____.
- A. red
 - B. green
 - C. yellow
 - D. black
01213. If the magnetic heading is greater than the compass heading, the deviation is _____.
- A. east
 - B. west
 - C. north
 - D. south
01216. In the Northern Hemisphere, winds veering sharply to the west or northwest with increasing speed are indications that a _____.
- A. cold front has passed
 - B. low pressure center is approaching
 - C. stationary front exists
 - D. high pressure center has passed
01217. What will be the velocity and direction of the tidal current at Old Ferry Point, NY, at 1340 EST (ZD +5) on 5 February 1983?
- A. 0.8 knot at 060° T
 - B. 0.8 knot at 240° T
 - C. 1.0 knot at 076° T
 - D. 1.4 knots at 076° T
01218. If your position is LAT 25° N, LONG 35° W, what correction should be applied to an RDF bearing received from a transmitting station in LAT 30° N, LONG 40° W?
- A. -1.3°
 - B. +1.3°
 - C. -2.1°
 - D. +2.1°
01219. Which sextant in illustration D043NG reads 29°42.5'?
- A. A
 - B. B
 - C. C
 - D. D
01221. On a chart, the characteristic of the light on a lighthouse is shown as flashing white with a red sector. The red sector _____.
- A. indicates the limits of the navigable channel
 - B. indicates a danger area
 - C. is used to identify the characteristics of the light
 - D. serves no significant purpose
01222. A starboard side daymark will _____.
- A. show a fixed red light if lighted
 - B. show a Morse (A) white light
 - C. be square in shape
 - D. have an even number if numbered

01223. The difference between magnetic heading and compass heading is called _____.
- A. variation
 - B. deviation
 - C. compass error
 - D. drift
01226. Cumulonimbus clouds are most likely to accompany a(n) _____.
- A. high pressure system
 - B. cold front
 - C. warm front
 - D. occluded front
01227. What will be the direction and velocity of the tidal current at Provincetown Harbor, MA, at 1405 DST (ZD +4) on 5 May 1983?
- A. 0.0 knot at 135° T
 - B. 0.2 knot at 135° T
 - C. 0.4 knot at 315° T
 - D. 0.6 knot at 315° T
01229. The initial great circle course angle between LAT 23°00' S, LONG 42°00' W and LAT 34°00' S, LONG 18°00' E is 063.8°. What is the true course?
- A. 063.8° T
 - B. 116.2° T
 - C. 243.8° T
 - D. 296.2° T
01231. Some lights used as aids to marine navigation have a red sector to indicate a danger area. The limits of a colored sector of light are listed in the Light List in which of the following manners?
- A. Geographical positions outlining the area of the sector
 - B. True bearings as observed from the light toward a vessel
 - C. True bearings as observed from a vessel toward the light
 - D. Bearings given in the Light List are always magnetic
01232. Entering from sea, triangular shaped daymarks are used to mark _____.
- A. the starboard side of the channel
 - B. the centerline of the channel
 - C. an obstruction where the preferred channel is to starboard
 - D. special purpose areas
01233. Deviation is the angle between the _____.
- A. true meridian and the axis of the compass card
 - B. true meridian and the magnetic meridian
 - C. magnetic meridian and the axis of the compass card
 - D. axis of the compass card and the degaussing meridian
01234. What information does the outer ring of a compass rose on a nautical chart provide?
- A. Variation
 - B. True directions
 - C. Magnetic directions
 - D. Annual rate of variation change

01236. After the passage of a cold front the visibility _____.
A. does not change
B. improves rapidly
C. improves only slightly
D. becomes poor
01237. What will be the velocity of the tidal current at Port Royal, VA, at 1505 DST (ZD +4) on 4 June 1983?
A. 0.0 knot
B. 0.1 knot
C. 0.4 knot
D. 0.7 knot
01238. What will be the height of tide at Three Mile Harbor Entrance, Gardiners Bay, NY, at 0700 (ZD +5) on 14 Nov 1983?
A. 1.1 feet
B. 1.7 feet
C. 1.9 feet
D. 2.2 feet
01239. While taking weather observations, you determine that the wind is blowing from the northeast. You would record the wind direction in the weather log as _____.
A. 045°
B. 090°
C. 135°
D. 225°
01241. Which picture in illustration D034NG shows a fixed and flashing light?
A. A
B. B
C. C
D. D
01242. Daymarks marking the starboard side of the channel when going towards the sea are _____.
A. green squares
B. green triangles
C. red squares
D. red triangles
01243. Magnetic heading differs from compass heading by _____.
A. compass error
B. true heading
C. variation
D. deviation
01244. What is the mark on a lead line indicating 5 fathoms?
A. Leather with a hole
B. White linen rag
C. Red woolen rag
D. Line with 5 knots

01246. What weather change accompanies the passage of a cold front in the Northern Hemisphere?
- A. Wind shift from northeast clockwise to southwest
 - B. Steady dropping of barometric pressure
 - C. Steady precipitation, gradually increasing in intensity
 - D. A line of cumulonimbus clouds
01247. What is the predicted velocity of the tidal current 2 miles west of Southwest Ledge for 2330 DST (ZD +4) on 7 September 1983?
- A. 1.3 knots
 - B. 1.6 knots
 - C. 1.9 knots
 - D. 2.2 knots
01248. On 6 July 1983, at 1520 DST (ZD +4) what will be the predicted height of tide at Newburgh, NY?
- A. 2.1 feet
 - B. 1.7 feet
 - C. 1.2 feet
 - D. 0.6 foot
01249. What is the light characteristic of a lighted, preferred-channel buoy?
- A. Fixed and flashing
 - B. Continuous quick
 - C. Isophase
 - D. Composite group-flashing
01251. A List of Lights entry (L Fl) is a single flashing light which shows a long flash of not less than _____.
- A. 1.0 second duration
 - B. 1.5 seconds duration
 - C. 2.0 seconds duration
 - D. 3.0 seconds duration
01252. Port side daymarks may be _____.
- A. numbered
 - B. octagonal
 - C. black and white
 - D. of any shape
01253. The horizontal angle between the magnetic meridian and the north-south line of the compass is the _____.
- A. deviation
 - B. variation
 - C. compass error
 - D. dip
01256. A cold front moving in from the northwest can produce _____.
- A. thunderstorms, hail, and then rapid clearing
 - B. increasing cloud cover lasting for several days
 - C. lengthy wet weather
 - D. low ceilings with thick cirrus clouds

01257. What will be the velocity of the tidal current 1.0 mile southwest of Lewis Pt., RI, at 1501 EST (ZD +5) on 4 April 1983?
- A. 0.7 knot
 - B. 1.4 knots
 - C. 1.6 knots
 - D. 1.9 knots
01260. On 26 February 1983, at 1750 EST (ZD +5) what will be the predicted height of tide at New Haven (city dock), CT?
- A. -.3 foot
 - B. -.6 foot
 - C. 1.3 feet
 - D. 1.6 feet
01261. A light having characteristics which include color variations is defined as _____.
- A. switching
 - B. alternating
 - C. oscillating
 - D. fluctuating
01262. A safe water daymark has what shape?
- A. Triangle
 - B. Diamond
 - C. Sphere
 - D. Octagon
01263. The compass deviation changes as the vessel changes _____.
- A. geographical position
 - B. speed
 - C. heading
 - D. longitude
01264. You take an RDF bearing on a vessel requiring assistance. The position of the vessel requiring assistance is LAT 30°00' N, LONG 140°00' W. Your position is LAT 25°00' N, LONG 135°00' W. What is the conversion angle you must apply to the RDF bearing to convert it to a Mercator course?
- A. -1.0°
 - B. +1.0°
 - C. -1.3°
 - D. +1.3°
01265. When reporting wind direction, you should give the direction in _____.
- A. true degrees
 - B. magnetic compass degrees
 - C. relative degrees
 - D. isobaric degrees
01266. A line of clouds, sharp changes in wind direction, and squalls is most frequently associated with a(n) _____.
- A. occluded front
 - B. warm front
 - C. cold front
 - D. warm sector

01267. What will be the velocity of the tidal current at Cocksackie, NY, at 0945 EST (ZD +5) on 11 March 1983?
- A. 0.3 knot
 - B. 0.7 knot
 - C. 1.2 knots
 - D. 1.9 knots
01268. On a nautical chart, the inner ring of a compass rose indicates _____.
- A. true directions
 - B. compass error
 - C. deviation
 - D. magnetic directions
01269. The Light List indicates that a light has a nominal range of 14 miles and is 42 feet high. If the visibility is 16 miles and your height of eye is 20 feet, at what approximate distance will you sight the light?
- A. 20.1 miles
 - B. 16.0 miles
 - C. 12.8 miles
 - D. 7.6 miles
01270. What is the mark on a lead line indicating 7 fathoms?
- A. Wooden toggle
 - B. White linen rag
 - C. Red woolen rag
 - D. Two strips of leather
01271. What word indicates color variation in the characteristics of a light?
- A. Opposing
 - B. Changing
 - C. Reversing
 - D. Alternating
01272. What are the colors of a midchannel daymark?
- A. Black and red
 - B. Red and white
 - C. Green and red
 - D. Green and white
01273. Deviation changes with a change in _____.
- A. latitude
 - B. heading
 - C. longitude
 - D. sea conditions
01274. Illustration D042NG represents the symbols used on radiofacsimile weather charts. Which of these symbols indicates a sandstorm?
- A. H
 - B. O
 - C. P
 - D. K

01275. How is variation indicated on a small-scale nautical chart?
- A. Magnetic compass table
 - B. Magnetic meridians
 - C. Isogonic lines
 - D. Variation is not indicated on small-scale nautical charts.
01276. Which of the following weather changes accompanies the passage of a cold front in the Northern Hemisphere?
- A. Wind shift from northeast, clockwise to southwest
 - B. Steady dropping of barometric pressure
 - C. Steady precipitation, gradually increasing in intensity
 - D. A line of cumulonimbus clouds
01277. What will be the velocity and direction of the tidal current at Port Morris, NY, at 1135 DST (ZD +4) on 13 May 1983?
- A. negligible at 220° T
 - B. 3.1 knots at 045° T
 - C. 1.2 knots at 220° T
 - D. 1.0 knot at 045° T
01279. For 3 November 1983, at 0830 EST (ZD +5) at Catskill, NY, what is the predicted height of tide?
- A. +0.1 foot
 - B. -0.6 foot
 - C. +0.9 foot
 - D. -1.3 feet
01280. A current perpendicular to a vessel's track has the greatest affect on the vessel's course made good _____.
- A. at high vessel speeds
 - B. at low vessel speeds
 - C. in shallow water
 - D. in deep water
01281. The time required for a lighted aid to complete a full cycle of light changes is listed in the Light List as the _____.
- A. set
 - B. frequency
 - C. period
 - D. function
01282. Entering from sea, a daymark on the port side of the channel would be indicated on a chart by a _____.
- A. red triangle with the letter R
 - B. white triangle with the letters RG
 - C. green square with the letter G
 - D. white square with the letters GR
01283. The error in a magnetic compass caused by the vessel's magnetism is called _____.
- A. variation
 - B. deviation
 - C. compass error
 - D. bearing error

01284. The Sailing Directions (Enroute) contain information on all of the following EXCEPT _____.
- A. ocean currents
 - B. outer dangers to navigation
 - C. tidal currents
 - D. major port anchorages
01285. You are enroute to assist vessel A. Vessel A is underway at 5.5 knots on course 033° T, and bears 248° T at 64 miles from you. What is the time to intercept if you make 13 knots?
- A. 4h 55m
 - B. 4h 36m
 - C. 3h 59m
 - D. 3h 44m
01286. Which condition will occur after a cold front passes?
- A. Temperature rises
 - B. Stratus clouds form
 - C. Pressure decreases
 - D. Humidity decreases
01287. What will be the velocity of the tidal current 4.5 miles east of Smith Point, VA, at 0630 DST (ZD +4) on 6 May 1983?
- A. 0.3 knot
 - B. 0.5 knot
 - C. 0.7 knot
 - D. 1.0 knot
01288. Your vessel will be docking at Chester, PA, during the evening of 22 April 1983. The chart shows a depth of 20 feet at the pier. What will be the depth of water available at 2310 EST (ZD +5)?
- A. 19.2 feet
 - B. 20.8 feet
 - C. 24.7 feet
 - D. 25.8 feet
01289. A body can only be observed at lower transit when _____.
- A. the declination is the opposite name to the latitude
 - B. the algebraic sum of the colatitude and declination exceeds 90°
 - C. the observer is in high latitudes above either polar circle
 - D. the body is circumpolar
01290. In addition to the National Weather Service, what agency provides plain-language radio weather advisories for the coastal waters of the United States?
- A. U.S. Defense Mapping Agency
 - B. U.S. Hydrological Survey
 - C. U.S. Coast Guard
 - D. American Meteorological Service
01291. The period of a lighted aid to navigation refers to the _____.
- A. date of construction or establishment
 - B. length of time between flashes of the light
 - C. time required for the longest flash of each cycle
 - D. time required for the light to complete each cycle

01292. A triangular daymark would be colored _____.
A. red
B. red and white
C. green
D. green and white
01293. Deviation is caused by _____.
A. changes in the earth's magnetic field
B. nearby magnetic land masses or mineral deposits
C. magnetic influence inherent to that particular vessel
D. the magnetic lines of force not coinciding with the lines of longitude
01294. What is the mark on a lead line indicating 10 fathoms?
A. One knot
B. One strip of leather
C. Leather with a hole
D. No marking
01295. The best estimate of the wind direction at sea level can be obtained from observing the direction of the _____.
A. cloud movement
B. vessel heading
C. waves
D. swells
01296. After a cold front passes the barometric pressure usually _____.
A. fluctuates
B. remains the same
C. remains the same, with clouds forming rapidly
D. rises, often quite rapidly, with clearing skies
01297. What will be the velocity of the tidal current at Bourneale, MA, at 1135 DST (ZD +4) on 3 May 1983?
A. 1.1 knots
B. 2.3 knots
C. 3.0 knots
D. 3.6 knots
01298. The vertex of a great circle track is in LONG 109° E. An eastbound vessel would cross the equator in LONG _____.
A. 161° W
B. 161° E
C. 19° E
D. 19° W
01299. What will be the time (ZD +5) of second high tide at Weymouth Fore River Bridge, MA, on 12 November 1983?
A. 1639
B. 1643
C. 1647
D. 1650

01300. You are approaching a sea buoy which emits a racon signal. This signal is triggered by which type of radar?
- A. 3 cm
 - B. 10 cm
 - C. Both 3 cm and 10 cm
 - D. Signal does not depend on radar type
01301. The four standard light colors used for lighted aids to navigation are red, green, white and _____.
- A. purple
 - B. orange
 - C. blue
 - D. yellow
01302. What feature(s) of a daymark is (are) used to identify the beacon upon which it is mounted?
- A. Color and shape
 - B. Size
 - C. Method of construction
 - D. Signal characteristics
01303. Compass deviation is caused by _____.
- A. magnetism from the earth's magnetic field
 - B. misalignment of the compass
 - C. magnetism within the vessel
 - D. a dirty compass housing
01304. The distance to the nearest vertex from any point on a great circle track cannot exceed _____.
- A. 5400 nautical miles
 - B. 5840 nautical miles
 - C. 6080 nautical miles
 - D. 10800 nautical miles
01306. What type of clouds are associated with a cold front?
- A. Altostratus and fracto-cumulus
 - B. Altostratus and cirrus
 - C. Cirrus and cirrostratus
 - D. Cumulus and cumulonimbus
01307. What will be the velocity of the tidal current southwest of Hunts Point, NY, at 0932 EST (ZD +5) on 16 March 1983?
- A. 0.9 knot
 - B. 1.5 knots
 - C. 1.8 knots
 - D. 2.3 knots
01308. On a voyage from Capetown to London, the favorable ocean current off the coast of Africa is the _____.
- A. Canary Current
 - B. Benguela Current
 - C. Agulhas Current
 - D. South Atlantic Current

01309. When recording the wind direction in the weather log, you would report the _____.
- A. direction the wind is blowing toward
 - B. direction the wind is blowing from
 - C. duration of the maximum gust of wind
 - D. wind chill factor
01310. An urgent marine storm warning message would be broadcast on _____.
- A. 2670 KHz
 - B. 156.80 MHz (VHF-FM Ch. 16)
 - C. 157.10 MHz (VHF-FM Ch. 22A)
 - D. None of the above
01311. Which of the following is the characteristic of a quick light?
- A. Shows groups of 2 or more flashes at regular intervals
 - B. Durations of light and darkness are equal
 - C. Shows not less than 50 flashes per minute
 - D. Shows quick flashes for about 5 seconds followed by a 1 second dark period
01312. What factor(s) determine(s) the charted visibility of a lighthouse's light in clear visibility?
- A. Height and intensity of the light
 - B. Height of the light and the observer
 - C. Height of the observer and the intensity of the light
 - D. Height of the light only
01313. Variation in a compass is caused by _____.
- A. worn gears in the compass housing
 - B. magnetism from the earth's magnetic field
 - C. magnetism within the vessel
 - D. lack of oil in the compass bearings
01314. Illustration D042NG represents the symbols used on radiofacsimile weather charts. Which of these symbols indicates hail?
- A. N
 - B. H
 - C. Q
 - D. F
01316. When a warm air mass overtakes a cold air mass, the contact surface is called a _____.
- A. line squall
 - B. water spout
 - C. cold front
 - D. warm front
01317. What will be the velocity and direction of the tidal current at Mobile River Entrance, AL, at 0915 CDT (ZD +5) on 13 May 1983?
- A. 0.1 knot at 333° T
 - B. 0.3 knot at 333° T
 - C. 0.7 knot at 151° T
 - D. 1.8 knots at 025° T

01318. You are to sail from Elizabethport, N.J., on 17 November 1983 with a maximum draft of 27 feet. You will pass over an obstruction in the channel near Sandy Hook that has a depth of 25.5 feet. The steaming time from Elizabethport to the obstruction is 1h 50m. What is the earliest time (ZD +5) you can sail on 17 November and pass over the obstruction with 2 feet of clearance?
- A. 0059
 - B. 0128
 - C. 0159
 - D. 0221
01319. The Sailing Directions (Planning Guide) contain information on all of the following EXCEPT _____.
- A. coastal features
 - B. ocean basin environment
 - C. ocean routes
 - D. military operating areas
01321. A lighthouse can be identified by _____.
- A. its painted color
 - B. its light color and phase characteristic
 - C. its type of structure
 - D. All of the above
01322. What will be the velocity of the tidal current at Grant's Tomb, 123rd Street, NY, NY, at 1412 EST (ZD +5) on 22 March 1983?
- A. 0.5 knot
 - B. 0.8 knot
 - C. 1.1 knots
 - D. 1.3 knots
01323. The magnetic compass error which changes with the geographical location of your vessel is called _____.
- A. deviation
 - B. variation
 - C. compensation
 - D. differentiation
01324. When daylight savings time is kept, the time of tide and current calculations must be adjusted. One way of doing this is to _____.
- A. add one hour to the times listed under the reference stations
 - B. subtract one hour from the time differences listed for the subordinate stations
 - C. apply no correction as the times in the reference stations are adjusted for daylight savings time
 - D. add 15° to the standard meridian when calculating the time difference
01326. A cloud sequence of cirrus, cirrostratus, and altostratus clouds followed by rain usually signifies the approach of a(n) _____.
- A. occluded front
 - B. stationary front
 - C. warm front
 - D. cold front

01327. What will be the velocity of the tidal current at 0.2 mile SSW of Clason Point, NY, at 1225 DST (ZD +4) on 17 April 1983?
- A. 0.5 knot
 - B. 0.9 knot
 - C. 1.1 knots
 - D. 1.9 knots
01328. What will be the velocity of the tidal current in Bolivar Roads, Texas, at a point 0.5 mile north of Ft. Point, on 23 November 1983 at 0330 CST?
- A. Slack water
 - B. 0.8 kt
 - C. 1.2 kts
 - D. 3.4 kts
01329. Yesterday your chronometer read 03h 01m 56s at the 1500 GMT time tick. Today your chronometer read 03h 01m 54s at the 1500 GMT time tick. What is the chronometer rate?
- A. 1m 54s fast
 - B. 2s fast
 - C. -2s
 - D. +2s
01330. If you are located within a stationary high pressure area and your aneroid barometer is falling very slowly, what would this indicate?
- A. A wind shift of 180°
 - B. A large increase in wind velocity
 - C. A decrease in the intensity of the system
 - D. An increase in the intensity of the system
01331. When trying to sight a lighthouse you notice a glare from a town in the background. The range at which the light may be sighted due to this glare is _____.
- A. considerably reduced
 - B. increased slightly due to extra lighting
 - C. unchanged
 - D. increased if the light is red or green due to contrast with the glare
01332. The longitude of the upper vertex of a great circle track is 169° E. What is the longitude of the lower vertex?
- A. 076° E
 - B. 169° W
 - C. 101° W
 - D. 011° W
01333. If a magnetic compass is not affected by any magnetic field other than the Earth's, which statement is TRUE?
- A. Compass error and variation are equal
 - B. Compass north will be true north
 - C. Variation will equal deviation
 - D. There will be no compass error

01334. Illustration D042NG represents the symbols used on radiofacsimile weather charts. The symbol indicated at letter "H" represents _____.
- A. ice
 - B. snow
 - C. rain
 - D. hail
01335. Plain language is usually used on marine weather _____.
- A. forecasts
 - B. observations
 - C. analyses
 - D. reports
01336. On the approach of a warm front, barometric pressure usually _____.
- A. falls
 - B. is steady
 - C. is uncertain
 - D. rises
01337. What will be the time of maximum flood current at Sagamore Bridge on the Cape Cod Canal during the morning of 6 December 1983 (ZD +5)?
- A. 0708
 - B. 0712
 - C. 0716
 - D. 1020
01338. What type of cloud is indicated by the number 6 in illustration D039NG?
- A. Altocumulus
 - B. Stratocumulus
 - C. Altostratus
 - D. Cirrus
01339. You are on course 303° T. To check the speed of your vessel you should observe a celestial body on which bearing?
- A. 000°
 - B. 090°
 - C. 123°
 - D. 213°
01340. The annual change in variation for an area can be found in _____.
- A. the handbook for Magnetic Compass Adjustment, Pub 226
 - B. the center of the compass rose on a chart of the area
 - C. the compass deviation table
 - D. Variation does not change.
01341. The height of a light is measured from what reference point?
- A. Mean low water
 - B. Mean high water
 - C. Average water level
 - D. Geographical sea level

01342. The coloring of an occluded front on a weather map is a(n) _____.
A. blue line
B. purple line
C. dashed blue line
D. alternate red and blue line
01343. Variation is a compass error that you _____.
A. can correct by adjusting the compass card
B. can correct by adjusting the compensating magnets
C. can correct by changing the vessel's heading
D. cannot correct
01346. Cirrus clouds followed by cirrostratus then altostratus, stratus, and occasionally nimbostratus indicate the approach of a(n) _____.
A. cold front
B. warm front
C. tropical front
D. occluded front
01347. What will be the velocity of the tidal current south of Doubling Point, ME, at 1357 EST (ZD +5) on 3 April 1983?
A. 0.9 knot
B. 1.3 knots
C. 2.0 knots
D. 2.6 knots
01349. Illustration D042NG represents the symbols used on radiofacsimile weather charts. Which of these symbols indicates a severe squall line?
A. F
B. I
C. G
D. H
01350. You are running parallel to the coast and take a running fix using bearings of the same object. You are making more speed than used for the running fix. In relation to the position indicated by the fix you will be _____.
A. closer to the coast
B. farther from the coast
C. on the track line ahead of the fix
D. on the track line behind the fix
01351. Luminous range is the _____.
A. maximum distance at which a light may be seen in clear weather
B. maximum distance at which a light may be seen under existing visibility conditions
C. maximum distance at which a light may be seen considering the height of the light and the height of the observer
D. average distance of visibility of light

01352. Disregarding phases of the Moon and the wind direction, determine the direction and velocity of the current by Charleston Lighted Whistle Buoy "2C" at 0430 EST (ZD +5) on 8 March 1983.
- A. 055° T, 0.2 knot
 - B. 077° T, 0.3 knot
 - C. 087° T, 0.6 knot
 - D. 093° T, 0.9 knot
01353. The difference in degrees between true north and magnetic north is called _____.
- A. variation
 - B. deviation
 - C. drift
 - D. compass error
01354. A ship is in longitude 54°00' W on a true course of 090°. The ship's clocks are on the proper time zone. At what longitude should the clocks be changed to maintain the proper zone time?
- A. 45°00' W
 - B. 52°30' W
 - C. 60°00' W
 - D. 67°30' W
01355. The parallax of the Moon is greatest when the Moon is _____.
- A. in the zenith at perigee
 - B. on the horizon at apogee
 - C. at its maximum altitude at apogee
 - D. on the horizon at perigee
01356. The first indications a mariner will have of the approach of a warm front will be _____.
- A. large cumulonimbus (thunderclouds) building up
 - B. high cirrus clouds gradually changing to cirrostratus and then to altostratus
 - C. fog caused by the warm air passing over the cooler water
 - D. low dark clouds accompanied by intermittent rain
01357. You will transit the Cape Cod Canal on 7 November 1983. If you arrive at the R R Bridge at 1655 EST (ZD +5), for what period of time during your transit will you have currents of not more than 0.5 knot?
- A. 1631 to 1719
 - B. 1638 to 1655
 - C. 1648 to 1702
 - D. 1655 to 1709
01359. The distance in longitude from the intersection of a great circle and the equator to the lower vertex is how many degrees of longitude?
- A. 45°
 - B. 90°
 - C. 135°
 - D. 180°

01360. What kind of clouds are composed entirely of ice crystals and are found at very high altitudes?
- A. Cumulus
 - B. Cirrus
 - C. Stratus
 - D. Nimbostratus
01361. The luminous range of a light takes into account the _____.
- A. glare from background lighting
 - B. existing visibility conditions
 - C. elevation of the light
 - D. observer's height of eye
01362. What type of cloud is indicated by the number 7 in illustration D039NG?
- A. Cirrostratus
 - B. Altocumulus
 - C. Cumulus
 - D. Cumulonimbus
01363. True heading differs from magnetic heading by _____.
- A. deviation
 - B. variation
 - C. compass error
 - D. northerly error
01364. The Sailing Directions are published in the Enroute format and the _____.
- A. Coastal editions
 - B. World Port Index
 - C. Pilot format
 - D. Planning Guide
01365. The same side of the Moon is always toward the Earth, but more than half of its surface has been seen due to libration. Libration in latitude occurs because _____.
- A. the axis of rotation is tilted about 6.5° to the axis of revolution
 - B. the speed of revolution varies, while the rotational speed is essentially constant
 - C. of the rotational oscillation of the Moon with respect to its radius vector
 - D. of augmentation
01366. Clouds appearing in the following order: cirrus, cirrostratus, altostratus, status, and nimbostratus usually indicate the approach of a(n) _____.
- A. warm front
 - B. occluded front
 - C. medium front
 - D. cold front

01367. You want to transit Hell Gate on 23 July 1983. What is the period of time around the AM (ZD +4) slack before ebb when the current will be less than 0.3 knot?
- A. 0939 to 0957
 - B. 0943 to 0953
 - C. 0844 to 0852
 - D. 0348 to 0356
01368. What area of the earth cannot be shown on a standard Mercator chart?
- A. Equator
 - B. Areas including both North and South latitudes
 - C. North and South Poles
 - D. A narrow band along the central meridian.
01369. You receive the following parts of an encoded weather analysis:
- | | | | | | |
|-------|-------|-------|-------|-------|-------|
| 10001 | 33300 | 01218 | 99900 | 85123 | 49623 |
| 70633 | 99911 | 66229 | 44250 | 48300 | 99922 |
| 44020 | 51630 | 48681 | 46622 | 49580 | 19191 |
- Using illustration DO35NG, you know that _____.
- A. a high of 1023 millibars is located in the North Pacific
 - B. a warm front is intensifying
 - C. the isobar reported has a pressure of 920 millibars
 - D. the high is moving towards 170° T at 6 knots
01370. What type of cloud is indicated by the number 8 in illustration DO39NG?
- A. Cumulonimbus
 - B. Altostratus
 - C. Cirrostratus
 - D. Nimbostratus
01373. The reaction of a gyrocompass to an applied force is known as _____.
- A. precession
 - B. earth rate
 - C. gyroscopic inertia
 - D. gravity effect
01374. On a working copy of a weather map, a warm front is represented by what color line?
- A. Red
 - B. Blue
 - C. Alternating red and blue
 - D. Purple
01375. The Moon rises earlier on succeeding days when the _____.
- A. retardation effect of the revolution of the Moon is greater than the effect due to change of declination
 - B. effect due to change of declination is larger than that due to revolution
 - C. the revolution effect and the declination effect act in the same direction
 - D. the Moon is on the equator and the revolution effect is at a maximum

01376. Which of the following is typical of warm front weather conditions?
- A. A steady barometer
 - B. A wind shift from southwest to northwest
 - C. Scattered cumulus clouds
 - D. Steady precipitation
01377. What is the velocity of the tidal current at the east end of Pollock Rip Channel at 1700 DST (ZD +4) on 23 July 1983?
- A. 0.6 knot ebbing
 - B. 0.8 knot flooding
 - C. 1.5 knots flooding
 - D. 1.9 knots flooding
01378. The latitude of the upper vertex of a great circle is 36° N. What is the latitude of the lower vertex?
- A. 36° N
 - B. 0°
 - C. 36° S
 - D. Cannot be determined from the information
01379. The lubber's line on a magnetic compass indicates _____.
- A. compass north
 - B. the direction of the vessel's head
 - C. magnetic north
 - D. a relative bearing taken with an azimuth circle
01380. What kind of weather could you expect soon after seeing hook or comma shaped cirrus clouds?
- A. Rain with the approach of a warm front
 - B. Clearing with the approach of a cold front
 - C. Continuing fog and rain
 - D. The formation of a tropical depression
01381. Geographic range is the maximum distance at which a light may be seen under _____.
- A. existing visibility conditions, limited only by the curvature of the Earth
 - B. perfect visibility conditions, limited only by the curvature of the Earth
 - C. existing visibility conditions, limited only by the intensity of the light
 - D. perfect visibility conditions, limited only by interference from background lighting
01382. The chart indicates the variation was $3^{\circ}45'$ W in 1988, and the annual change is increasing $6'$. If you use the chart in 1991 how much variation should you apply?
- A. $3^{\circ}27'$ W
 - B. $3^{\circ}27'$ E
 - C. $4^{\circ}03'$ W
 - D. $4^{\circ}03'$ E

01383. The spin axis of a gyroscope tends to remain fixed in space in the direction in which it is started. How does this gyroscope become north seeking so that it can be used as a compass?
- By mechanically or electrically applying forces to precess the gyroscope
 - By starting the compass with the spin axis in a north/south position
 - By taking advantage of the property of gyroscopic inertia
 - The rotation of the Earth (Earth rate) automatically aligns the gyroscope with north, except for speed errors
01384. What type of cloud is indicated by the number 9 in illustration D039NG?
- Cumulus
 - Cumulonimbus
 - Altostratus
 - Stratocumulus
01385. What is the length of the lunar day?
- 24h 50m 00s
 - 24h 00m 00s
 - 23h 56m 04s
 - 23h 03m 56s
01386. The FIRST indications a mariner will have of the approach of a warm front will be _____.
- large cumulonimbus clouds building up
 - low dark clouds with intermittent rain
 - fog caused by the warm air passing over the cooler water
 - high clouds gradually followed by lower thicker clouds
01387. You will be entering the Mystic River in Connecticut. What is the current at the Highway Bridge at 1900 EST (ZD +5) on 24 January 1983?
- 2.2 knots flooding
 - Slack water
 - Slight ebb
 - 2.5 knots ebbing
01388. You receive the following parts of an encoded weather analysis:
- | | | | | | |
|-------|-------|-------|-------|-------|-------|
| 10001 | 33300 | 01218 | 99900 | 85123 | 49623 |
| 70633 | 99911 | 66229 | 44250 | 48300 | 99922 |
| 44020 | 51630 | 48681 | 46622 | 49580 | 19191 |
- Using illustration D035NG, you know that _____.
- a high is located in the North Atlantic
 - the report is for 1800 GMT
 - a low of 985 millibars is reported
 - the 1020 millibar isobar passes through 19.5° N, 119° W
01389. A boundary between two air masses is a _____.
- lapse rate
 - isobar
 - front
 - continent

01390. The fog most commonly encountered at sea is called _____.
A. conduction fog
B. radiation fog
C. frontal fog
D. advection fog
01391. When a light is first seen on the horizon it will disappear again if the eye is immediately lowered several feet. When the eye is raised to its former height the light will again be visible. This process is called _____.
A. checking a light
B. luminous range
C. obscuring a light
D. bobbing a light
01392. Cumulonimbus clouds are indicated by what number in illustration D039NG?
A. 9
B. 7
C. 5
D. 3
01393. The directive force of a gyrocompass _____.
A. increases with latitude, being maximum at the geographic poles
B. decreases with latitude, being maximum at the geographic equator
C. is greatest when a vessel is near the Earth's magnetic equator
D. remains the same at all latitudes
01394. A great circle crosses the equator at 17° W. It will also cross the equator at what other longitude?
A. 173° W
B. 117° W
C. 163° E
D. 17° E
01395. The lunar day is _____.
A. longer than a solar day
B. shorter than a solar day
C. the same length as the solar day
D. longer than a solar day during the summer months and shorter in winter months
01396. On the approach of a warm front barometric pressure usually _____.
A. falls
B. rises
C. is steady
D. is unreliable
01397. What will be the velocity of the tidal current at Port Jefferson Harbor Entrance, NY, at 1600 EST (ZD +5) on 23 December 1983?
A. 0.9 knot
B. 1.1 knots
C. 1.6 knots
D. 2.0 knots

01398. Nimbostratus clouds are indicated by what number in illustration D039NG?
- A. 8
 - B. 6
 - C. 4
 - D. 1
01399. You are bound for Baltimore via Cape Henry on a 15 knot ship. If flood tide at Chesapeake Bay entrance begins at 1800 EST (ZD +5), at what time would you depart from the Chesapeake Bay entrance to have the most favorable current?
- A. 1700 hours
 - B. 1800 hours
 - C. 1900 hours
 - D. 2030 hours
01400. What type of clouds are among the most dependable for giving an indication of an approaching weather system?
- A. Cumulus
 - B. Altostratus
 - C. Cumulostratus
 - D. Nimbus
01401. The maximum distance at which a light may be seen under the existing visibility conditions is called _____.
- A. nominal range
 - B. luminous range
 - C. charted range
 - D. geographic range
01402. As a vessel changes course to starboard, the compass card in a magnetic compass _____.
- A. first turns to starboard then counterclockwise to port
 - B. also turns to starboard
 - C. turns counterclockwise to port
 - D. remains aligned with compass north
01403. Which of the following statements about the gyrocompass is NOT correct?
- A. Its accuracy remains the same at all latitudes.
 - B. It seeks the true meridian.
 - C. It can be used near the Earth's magnetic poles.
 - D. If an error exists, it is the same on all headings.
01404. A great circle will intersect the equator at how many degrees of longitude apart?
- A. 0°
 - B. 45°
 - C. 90°
 - D. 180°
01405. After Venus passes the point of greatest elongation east in its orbit, the first position in which the elongation will be zero is _____.
- A. superior conjunction
 - B. inferior conjunction
 - C. opposition
 - D. None of the above; the elongation will never be zero

01406. Which of the following will act to dissipate fog?
- A. Upwelling cold water
 - B. Advection of warm air over a colder surface
 - C. Rain that is warmer than air
 - D. Downslope motion of an air mass along a coast
01407. You want to transit Buttermilk Channel, NY, on 16 Dec 1983. What is the period of time around the 1257 (ZD +5) slack in which the current does not exceed 0.3 knot?
- A. 1246 to 1308
 - B. 1235 to 1257
 - C. 1235 to 1319
 - D. 1257 to 1319
01408. An occluded front is caused by a(n) _____.
- A. low pressure area
 - B. high pressure area
 - C. area of calm air
 - D. cold front overtaking a warm front
01409. You are enroute to assist vessel A. Vessel A is underway at 5.5 knots on course 033° T, and bears 284° T, 43 miles from you. What is the time to intercept if you make 16 knots?
- A. 2h 16m
 - B. 2h 22m
 - C. 2h 34m
 - D. 2h 42m
01411. The nominal range of a light may be accurately defined as the maximum distance at which a light may be seen _____.
- A. under existing visibility conditions
 - B. under perfect visibility
 - C. with ten miles visibility
 - D. with fifteen miles visibility
01413. The gyrocompass error resulting from your vessel's movement in OTHER than an east-west direction is called _____.
- A. damping error
 - B. ballistic deflection
 - C. quadrantal error
 - D. speed error
01414. You are planning a voyage from New York to Norway via the English Channel. What publication contains information on the dangers to navigation in the English Channel?
- A. Channel Pilot's Guide
 - B. World Port Index
 - C. Coast Pilot
 - D. Sailing Directions (Enroute)

01415. Planetary aberration is due, in part, to _____.
A. refraction of light as it enters the Earth's atmosphere
B. rotation of the Earth on her axis
C. the body's orbital motion during the time required for its light to reach Earth
D. a false horizon
01416. Radiation fog _____.
A. always forms over water
B. is formed by a temperature inversion
C. is thinnest at the surface
D. dissipates during the evening
01417. Determine the first time after 1200 EST (ZD +5) when the velocity of the current will be 0.5 knot on 18 November 1983, at Marcus Hook, PA.
A. 1221
B. 1226
C. 1239
D. 1312
01418. You receive the following parts of an encoded weather analysis:
10001 33300 01218 99900 85123 49623
70633 99911 66229 44250 48300 99922
44020 51630 48681 46622 49580 19191
Using illustration D035NG, you know that _____.
A. the reported low is deepening
B. the 1020 isobar passes through 46° N, 162.5° W
C. frontal activity is moderate and increasing
D. the front is moving towards 060° at 23 knots
01419. The MOST important feature of the material used for making the binnacle of a standard magnetic compass is that it is _____.
A. nonmagnetic
B. weatherproof
C. corrosion resistant
D. capable of being permanently affixed to the vessel
01421. What is the approximate geographic visibility of an object with a height above the water of 70 feet, for an observer with a height of eye of 65 feet?
A. 16.8 nm
B. 19.0 nm
C. 20.6 nm
D. 22.4 nm
01422. Cumulus clouds are indicated by what number in illustration D039NG?
A. 3
B. 5
C. 6
D. 7

01423. Quadrantal error in a gyrocompass has its GREATEST effect _____.
A. in high latitudes
B. near the equator
C. on north or south headings
D. on intercardinal headings
01424. Except for N-S courses, and E-W courses on the equator, a great circle track between two points, when compared to a rhumb line track between the same two points, will _____.
A. always be nearer to the equator
B. always be nearer to the elevated pole
C. be nearer to the pole in the Northern Hemisphere and nearer to the equator in the Southern Hemisphere
D. be nearer to the pole or the equator depending on the latitudes of the arrival and departure positions
01425. Which is an inferior planet?
A. Mars
B. Venus
C. Neptune
D. Pluto
01426. Fog is most commonly associated with a(n) _____.
A. warm front at night
B. low pressure area
C. anticyclone
D. lack of frontal activity
01427. Determine the duration of the first PM slack water on 3 March 1983, east of the Statue of Liberty, when the current is less than 0.1 knot?
A. 10 minutes
B. 13 minutes
C. 16 minutes
D. 19 minutes
01428. The speed of sound in water is approximately _____.
A. 1.5 times its speed in air
B. 2.5 times its speed in air
C. 3.5 times its speed in air
D. 4.5 times its speed in air
01429. A celestial body will cross the prime vertical circle when _____.
A. the latitude is numerically greater than the declination and both are of the same name
B. the latitude is numerically less than the declination and both are of the same name
C. the latitude is numerically greater than the declination and both are of contrary name
D. the latitude is numerically less than the declination and both are of contrary name

01430. The Light List indicates that a light has a nominal range of 14 miles and is 42 feet high. If the visibility is 6 miles and your height of eye is 20 feet, at what approximate distance will you sight the light?
- A. 20.1 miles
 - B. 10.0 miles
 - C. 7.6 miles
 - D. 6.0 miles
01431. A lighthouse is 120 feet high and the light has a nominal range of 18 miles. Your height of eye is 42 feet. If the visibility is 11 miles, approximately how far off the light will you be when the light becomes visible?
- A. 12.5 miles
 - B. 16.0 miles
 - C. 19.0 miles
 - D. 23.5 miles
01432. You receive the following parts of an encoded weather analysis:
- | | | | | | |
|-------|-------|-------|-------|-------|-------|
| 10001 | 33300 | 01218 | 99900 | 85123 | 49623 |
| 70633 | 99911 | 66229 | 44250 | 48300 | 99922 |
| 44020 | 51630 | 48681 | 46622 | 49580 | 19191 |
- Using illustration DO35NG, you know that _____.
- A. the analysis is applicable to the South Pacific
 - B. the isobar reported is 1022 millibars
 - C. the front is an occluded front
 - D. a high is centered at 49.5° N, 62.5° W
01433. A system of reservoirs and connecting tubes in a gyro compass is called a _____.
- A. spider element
 - B. mercury ballistic
 - C. gyrotron
 - D. rotor
01434. Which of the following is NOT a characteristic of cardinal marks?
- A. Yellow and black bands
 - B. White lights
 - C. Square or triangular topmarks
 - D. Directional orientation to a hazard
01435. Inferior conjunction is possible for _____.
- A. Mars
 - B. Venus
 - C. Saturn
 - D. Jupiter
01436. Fog forms when the air _____.
- A. is 50% water saturated
 - B. is 90% water saturated
 - C. temperature is greater than the dew point temperature
 - D. temperature equals or is below the dew point temperature

01437. Determine the time after 0300 CST (ZD +6) when the velocity of the tidal current will be 0.5 knot on 16 April 1983, at Port Arthur Canal Entrance, TX.
- A. 0436
 - B. 0507
 - C. 0538
 - D. 0554
01438. In the Northern Hemisphere you are caught in the dangerous semicircle of a storm with plenty of sea room available. The best course of action is to bring the wind on the _____.
- A. port quarter and make as much headway as possible
 - B. starboard quarter and make as much headway as possible
 - C. starboard bow and make as much headway as possible
 - D. port bow and make as much headway as possible
01439. Illustration D042NG represents the symbols used on radiofacsimile weather charts. The symbol indicated at letter "G" represents a _____.
- A. weather boundary
 - B. thunderstorm
 - C. wide spread sandstorm
 - D. severe line squall
01440. A mercurial barometer at sea is subject to rapid variations in height ("pumping") due to the pitch and roll of the vessel. To avoid this error, measurements of atmospheric pressure at sea are usually measured with a(n) _____.
- A. syphon barometer
 - B. cistern barometer
 - C. aneroid barometer
 - D. fortin barometer
01441. Your height of eye is 40 feet. What is the approximate geographical distance at which Dry Tortugas Light, FL, could be visible?
- A. 18.3 miles
 - B. 19.5 miles
 - C. 21.5 miles
 - D. 22.8 miles
01442. A great circle track provides the maximum saving in distance on _____.
- A. easterly courses in high latitudes
 - B. southerly courses in high latitudes
 - C. westerly courses in low latitudes
 - D. easterly courses in low latitudes that cross the equator
01443. At the master gyrocompass, the compass card is attached to the _____.
- A. spider element
 - B. sensitive element
 - C. link arm
 - D. pickup transformer

01444. Stratocumulus clouds are indicated by what number in illustration D039NG?
- A. 1
 - B. 4
 - C. 6
 - D. 7
01445. The planet Mars will have its greatest magnitude when at _____.
- A. conjunction
 - B. opposition
 - C. east quadrature
 - D. west quadrature
01446. When compared to air temperature, which of the following factors is most useful in predicting fog?
- A. Vapor pressure
 - B. Dew point
 - C. Barometric pressure
 - D. Absolute humidity
01447. What will be the velocity of the tidal current 6 miles south of Shoal Point, NY, at 1850 DST (ZD +4) on 9 July 1983?
- A. -0.2 knot
 - B. 0.2 knot
 - C. 1.2 knots
 - D. 1.4 knots
01448. Spring tides occur when the _____.
- A. Moon is in its first quarter or third quarter phase
 - B. Sun and Moon oppose each other
 - C. Moon's declination is maximum and opposite to that of the Sun
 - D. Moon is new or full
01449. The presence of stratus clouds and a dying wind will usually result in _____.
- A. heavy rain
 - B. heavy snow
 - C. thick fog
 - D. clearing skies
01452. The rhumb line distance is the same as the great circle distance in which of the following?
- A. Course 090° T in high latitudes
 - B. Course 180° T when you cross the equator
 - C. Course 045° T in low latitudes
 - D. The rhumb line distance is always longer than the great circle distance.
01453. Indications of the master gyrocompass are sent to remote repeaters by the _____.
- A. follow-up system
 - B. transmitter
 - C. phantom element
 - D. azimuth motor

01454. You receive the following parts of an encoded weather analysis:

10001	33300	01218	99900	85123	49623
70633	99911	66229	44250	48300	99922
44020	51630	48681	46622	49580	19191

Using illustration DO35NG, you know that _____.

- A. a pressure system is moving towards 306° T at 23 knots
- B. the 999 millibar passes through 46° N, 162.5° W
- C. the report is for the Northern hemisphere from 0° - 90° W
- D. the high is weakening

01455. Inferior conjunction is possible for _____.

- A. Mercury
- B. Saturn
- C. Mars
- D. Jupiter

01456. The fog produced by warm moist air passing over a cold surface is called _____.

- A. conduction fog
- B. radiation fog
- C. frontal fog
- D. advection fog

01457. What is the period of time from around 1008 DST (ZD +4) at Canapitsit Channel, MA, on 7 August 1983, in which the current does not exceed 0.4 knot?

- A. 0945 to 1031
- B. 0950 to 1026
- C. 0955 to 1021
- D. 1000 to 1024

01459. In a tropical cyclone, in the Northern Hemisphere, a vessel hove to with the wind shifting counterclockwise would be _____.

- A. ahead of the storm center
- B. in the dangerous semicircle
- C. in the navigable semicircle
- D. directly in the approach path of the storm

01460. What is the major advantage of a rhumb line track?

- A. The vessel can steam on a constant heading (disregarding wind, current, etc.).
- B. The rhumb line is the shortest distance between the arrival and departure points.
- C. It is easily plotted on a gnomonic chart for comparison with a great circle course.
- D. It approximates a great circle on east-west courses in high latitudes.

01461. The chart indicates the variation was 3°45' W in 1988, and the annual change is decreasing 6'. If you use the chart in 1991 how much variation should you apply?

- A. 3°27' W
- B. 3°27' E
- C. 4°03' W
- D. 4°03' E

01462. Altocumulus clouds are indicated by what number in illustration D039NG?

- A. 1
- B. 3
- C. 4
- D. 5

01463. If the gyrocompass error is east, which of the following describes the error and the correction to be made to gyrocompass headings to obtain true headings?

- A. The readings are too low (small numerically) and the amount of the error must be added to the compass to obtain true
- B. The readings are too low and the amount of the error must be subtracted from the compass to obtain true
- C. The readings are too high (large numerically) and the amount of the error must be added to the compass to obtain true
- D. The readings are too high and the amount of the error must be subtracted from the compass to obtain true

01464. A line of position derived from a loran reading is a section of a(n) _____.

- A. straight line
- B. arc
- C. parabola
- D. hyperbola

01465. The planet Venus can be observed in the morning if it is well to the _____.

- A. west of and higher than the Sun
- B. west of and lower than the Sun
- C. east of and higher than the Sun
- D. east of and lower than the Sun

01466. Advection fog is most commonly caused by _____.

- A. air being warmed above the dew point
- B. saturation of cold air by rain
- C. a rapid cooling of the air near the surface of the Earth at night
- D. warm moist air being blown over a colder surface

01467. Determine the time after 0730 EST (ZD +5) when the velocity of the current will be 2.1 knots on 26 March 1983, at Fort Pulaski, GA.

- A. 0802
- B. 0812
- C. 0821
- D. 0840

01468. Which of the following is NOT an advantage of the rhumb line track over a great circle track?

- A. Easily plotted on a Mercator chart
- B. Negligible increase in distance on east-west courses near the equator
- C. Does not require constant course changes
- D. Plots as a straight line on Lambert conformal charts

01469. The charted channel depth at Eastport, ME, is 28 feet. You are drawing 31.5 feet and wish 2 feet clearance under the keel. What is the earliest time after 1700 (ZD +4) on 6 September 1983 that you can enter the channel?
- A. 1803
 - B. 1842
 - C. 1905
 - D. 1916
01470. Illustration D042NG represents the symbols used on radiofacsimile weather charts. Which of these symbols indicates a hurricane?
- A. M
 - B. I
 - C. L
 - D. K
01471. A mountain peak charted at 700 feet breaks the horizon, and your height of eye is 12 feet. What is your approximate distance off (choose closest answer)?
- A. 34.7 nm
 - B. 40.3 nm
 - C. 55.3 nm
 - D. 61.6 nm
01472. What is the mark on a lead line indicating 4 fathoms?
- A. No marking
 - B. Four knots
 - C. Red woolen rag
 - D. White linen rag
01473. Which statement about gyrocompass error is TRUE?
- A. The amount of the error and the sign will generally be the same on all headings.
 - B. The sign (E or W) of the error will change with different headings of the ship.
 - C. Any error will remain constant unless the compass is stopped and restarted.
 - D. Any error shown by a gyro repeater will be the same as the error of the master compass.
01474. You are on course 061° T. To check the longitude of your vessel you should observe a celestial body on which bearing?
- A. 090°
 - B. 180°
 - C. 241°
 - D. 061°
01475. What kind of cloud is the classic "thunderhead"?
- A. Cumulonimbus
 - B. Stratus
 - C. Cirrus
 - D. Altostratus

01476. When warm moist air blows over a colder surface and is cooled below its dew point it causes _____.
A. radiation fog
B. ice fog
C. advection fog
D. frost smoke
01477. The wind in the vicinity of Nantucket Shoals Light has been southerly at an average speed of 23 knots. The predicted set and drift of the rotary tidal current are 225° at 0.8 knot. What are the set and drift of the current you can expect at Nantucket Shoals Light?
A. 025° at 1.8 knots
B. 218° at 1.1 knots
C. 235° at 0.5 knot
D. 247° at 0.7 knot
01478. Altostratus clouds are indicated by what number in illustration D039NG?
A. 1
B. 4
C. 6
D. 8
01479. A microbarograph is a precision instrument that provides a _____.
A. charted record of atmospheric temperature over time
B. charted record of atmospheric pressure over time
C. graphic record of combustible gases measured in an atmosphere
D. graphic record of vapor pressure from a flammable/combustible liquid
01481. What is the approximate geographic range of West Quoddy Head Light, ME, if your height of eye is 42 feet?
A. 18.0 nm
B. 15.4 nm
C. 13.0 nm
D. 10.3 nm
01482. Which statement concerning current is TRUE?
A. Current can be determined by measuring the direction and distance between simultaneous EP and DR positions.
B. The drift of the current should be averaged out on a one hour basis.
C. After the current is determined, it should not be used for further plotting because it is an unknown variable.
D. The distance between a simultaneous DR position and fix is equal to the drift of the current.
01483. The most accurate method of determining gyrocompass error while underway is by _____.
A. comparing the gyro azimuth of a celestial body with the computed azimuth of the body
B. comparing the gyro heading with the magnetic compass heading
C. determining from the chart the course made good between celestial fixes
D. It cannot be determined accurately at sea due to drift of unknown currents.

01485. You receive the following parts of an encoded weather analysis:

10001	33300	01218	99900	85123	49623
70633	99911	66229	44250	48300	99922
44020	51630	48681	46622	49580	19191

Using illustration DO35NG, you know that _____.

- A. a low is moving towards 060° at 23 knots
- B. the 1044 isobar passes through 51° N, 163° W
- C. the report is for the Northern Hemisphere
- D. the report is for the 18th day of the month at 1200 GMT

01486. Which condition would most likely result in fog?

- A. Warm moist air blowing over cold water
- B. Airborne dust particles
- C. Warm moist air blowing over warm water
- D. Dew point falling below the air temperature

01487. At the approaches to Savannah, GA, with the wind coming out of the west, the wind-driven current will be flowing approximately _____.

- A. 080°
- B. 100°
- C. 260°
- D. 280°

01488. Which of the following defines a great circle?

- A. A curved line drawn on a Mercator Chart
- B. A course line that inscribes a loxodromic curve
- C. The shortest distance between any two points on the earth
- D. The smallest circle that can be drawn on the face of a sphere

01489. Cumulonimbus clouds can produce _____.

- A. dense fog and high humidity
- B. gusty winds, thunder, rain or hail, and lightning
- C. clear skies with the approach of a cold front
- D. a rapid drop in barometric pressure followed by darkness

01490. In the IALA-B Buoyage System, preferred-channel-to-port or preferred-channel-to-starboard buoys, when fitted with lights, will show a _____.

- A. quick flashing light
- B. long flashing light
- C. composite group flashing (2 + 1) light
- D. group flashing

01491. You are on course 138° T. To check the latitude of your vessel you should observe a celestial body on which bearing?

- A. 138°
- B. 270°
- C. 318°
- D. 000°

01492. You are planning a voyage from San Francisco to Japan. Which publication contains information on the ocean routes?
- A. Coast Pilot
 - B. Sailing Directions (Planning Guide)
 - C. Sailing Directions (Enroute)
 - D. World Port Index
01493. You are running parallel to the coast and estimate that the current is against you. In plotting a running fix using bearings from the same object on the coast, the greatest safety margin from inshore dangers will result if what speed is used to determine the fix?
- A. Minimum speed estimate
 - B. Maximum speed estimate
 - C. Average speed estimate
 - D. A running fix should not be used under these conditions.
01494. Cirrocumulus clouds are indicated by what number in illustration D039NG?
- A. 7
 - B. 5
 - C. 3
 - D. 1
01495. A great circle crosses the equator at 157° W. It will also cross the equator at what other longitude?
- A. 157° E
 - B. 57° E
 - C. 23° E
 - D. 57° W
01496. In a microbarograph, the pen should be checked and the inkwell filled _____.
- A. each time the chart is changed
 - B. once per month
 - C. once per week
 - D. daily
01497. When drawing a weather map and an isobar crosses a front, the isobar is drawn _____.
- A. perpendicular to the front
 - B. kinked and pointing away from the low
 - C. kinked and pointing towards the low
 - D. kinked and pointing towards the high for a warm front only
01498. A true bearing of a charted object, when plotted on a chart, will establish a _____.
- A. fix
 - B. line of position
 - C. relative bearing
 - D. range

01499. You are scanning the radar screen for a buoy fitted with racon. How should this signal appear on the PPI display?
- A. Starting with a dash and extending radially outward from the target
 - B. As a broken line from center of PPI to the target
 - C. Starting with a dot and extending radially inward from the target
 - D. Starting with a dash and extending to the right of the target
01500. In what order should the following sextant adjustments be made?
- I. Make telescope parallel to frame of sextant.
 - II. Set horizon glass perpendicular to frame of sextant.
 - III. Make index mirror and horizon glass parallel to frame of sextant when index arm is set at zero.
 - IV. Set index mirror perpendicular to frame of sextant.
- A. I, II, III, IV
 - B. I, IV, II, III
 - C. III, II, IV, I
 - D. IV, II, III, I
01501. What is the distance from the bottom of a wave trough to the top of a wave crest?
- A. Wave length
 - B. Wave height
 - C. Wave breadth
 - D. Wave depth
01502. You are running parallel to the coast and take a running fix using bearings of the same object. If you are making less speed than used for the running fix, in relation to the position indicated by the fix, you will be _____.
- A. closer to the coast
 - B. farther from the coast
 - C. on the track line ahead of the fix
 - D. on the track line behind the fix
01503. A radar range to a small, charted object such as a light will provide a line of position in what form?
- A. Straight line
 - B. Arc
 - C. Parabola
 - D. Hyperbola
01504. The time meridian used when computing the height of tide for Pensacola Bay, FL, is _____.
- A. 75°00' W
 - B. 82°30' W
 - C. 90°00' W
 - D. 97°30' W
01505. At 0000 you fix your position and change course to 090° T. At 0030 you again fix your position and it is 0.5 mile east of your DR. Which of the following statements is TRUE?
- A. The current is easterly.
 - B. The drift is 0.5 knot.
 - C. You should alter course to the right to regain the track line.
 - D. The current is perpendicular to your track line.

01506. You are steaming southward along the west coast of the United States when you sight a buoy showing a flashing green light. How should you pass this buoy?
- Leave it to your port
 - Leave it to your starboard
 - Pass it close aboard on either side
 - Pass it on either side but well clear of it
01508. A line of position is _____.
- a line connecting two charted objects
 - a line on some point of which the vessel may be presumed to be located
 - the position of your vessel
 - not used in a running fix
01509. Your facsimile prognostic chart indicates that you will cross the cold front of a low pressure system in about 24 hours. You should _____.
- expect to see cirrus clouds followed by altostratus and nimbostratus clouds
 - alter course to remain in the navigable semicircle
 - prepare for gusty winds, thunderstorms, and a sudden wind shift
 - expect clear weather, with steady winds and pressure, until the front passes
01512. When plotting a running fix and the LOP to be run forward is an arc from a radar range, what technique should be used?
- The arc should be converted into a straight line using offsets and then run forward.
 - An arc should never be run forward.
 - The object of the range should be run forward and a new arc swung using the radius of the old arc.
 - The distance between LOP's should be added to the radar range and a new arc swung.
01513. You receive the following parts of an encoded weather analysis:
- | | | | | | |
|-------|-------|-------|-------|-------|-------|
| 10001 | 33300 | 01218 | 99900 | 85123 | 49623 |
| 70633 | 99911 | 66229 | 44250 | 48300 | 99922 |
| 44020 | 51630 | 48681 | 46622 | 49580 | 19191 |
- Using illustration DO35NG, you know that _____.
- a low of 999 millibars is present
 - the 1020 isobar goes through a position at 49°30' N, 68°00' W
 - a weak, warm front is being reported
 - this report applies to the Southern Hemisphere
01514. The compass error of a magnetic compass that has no deviation is _____.
- zero
 - equal to variation
 - eliminated by adjusting the compass
 - constant at any geographical location

01517. When determining compass error by an azimuth of Polaris, you enter the Nautical Almanac with the _____.
- A. GHA Aries
 - B. LHA Aries
 - C. LHA Polaris
 - D. GHA Polaris
01518. Which of the following publications requires infrequent corrections?
- A. List of Lights
 - B. Coast Pilot
 - C. Sailing Directions (Planning Guide)
 - D. Radio Navigational Aids
01519. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). Your position is LAT 10°38' S, LONG 00°14' E. How would this be encoded?
- A. LAT 10.6° S, LONG 00.2° E
 - B. L106S, 30002
 - C. 10385, 0014E
 - D. 99106, 30002
01520. The diurnal inequality of the tides is caused by _____.
- A. the declination of the Moon
 - B. changing weather conditions
 - C. the Moon being at apogee
 - D. the Moon being at perigee
01523. Which of the following is a characteristic of the weather preceding an approaching warm front?
- A. Gusty winds
 - B. Steadily falling barometric pressure
 - C. Decreasing relative humidity
 - D. Clearing skies
01525. You are in LAT 50° S and obtain an RDF bearing on a vessel 400 miles due west of you. You should expect to receive the bearing from the _____.
- A. southeast quadrant
 - B. northeast quadrant
 - C. northwest quadrant
 - D. southwest quadrant
01527. Your vessel is on course 270° T, speed 10 knots. The apparent wind is from 10° off the port bow, speed 30 knots. What is the direction of the true wind?
- A. 345° T
 - B. 255° T
 - C. 165° T
 - D. 075° T
01528. Cirrostratus clouds are indicated by what number in illustration D039NG?
- A. 1
 - B. 2
 - C. 8
 - D. 9

01530. Waves that are too steep to be stable, causing the crests to move forward faster than the rest of the wave, are called _____.
A. rollers
B. breakers
C. white caps
D. surfers
01531. The magnitude of three stars is indicated. Which star is the brightest?
A. Antares + 1.2
B. Altair + 0.9
C. Vega + 0.1
D. Cannot be determined; magnitude indicates size not brightness
01534. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). Your position is LAT 22°31' S, LONG 138°19' W. How would this be encoded?
A. LAT 22.5° S, LONG 138.3° W
B. 99225, 51383
C. L2231, 53819
D. 2231S, 5383W
01535. You receive the following parts of an encoded weather analysis:
10001 33300 01218 99900 85123 49623
70633 99911 66229 44250 48300 99922
44020 51630 48681 46622 49580 19191
Using illustration D035NG, you know that _____.
A. the frontal positions are doubtful
B. a low of 999 millibars is being reported
C. the 920 millibar isobar passes through 51° N, 163° W
D. the front is moving toward 060° at 23 knots
01536. What will NOT induce errors into a doppler sonar log?
A. Increased draft
B. Pitch
C. Roll
D. Change in trim
01537. Which sextant in illustration D043NG reads 29°47.5' ?
A. A
B. B
C. C
D. D
01538. The winds of the roaring forties are strongest near _____.
A. 40° N
B. 50° N
C. 40° S
D. 50° S

01539. You are steaming in the open ocean of the North Pacific between the Aleutian Chain and Hawaii. A warning broadcast indicates that an earthquake has occurred in the Aleutians and has generated a tsunami that is predicted to hit Hawaii. What action is necessary for the ship's safety?
- A. Calculate the tsunami's ETA at your position and turn to a course that will head into the Tsunami
 - B. Securely stow all loose gear, check deck lashings, and prepare for extreme rolls
 - C. No special action as tsunamis are inconspicuous in the open ocean
 - D. Prepare for sudden, high-velocity wind gusts from rapidly changing directions
01540. You are sailing south on the ICW when you sight a green can buoy with a yellow square painted on it. Which of the following is TRUE?
- A. You should pass the buoy close aboard on either side.
 - B. The buoy marks the end of the ICW in that area.
 - C. You should leave the buoy to port.
 - D. The yellow square is retroreflective material used to assist in sighting the buoy at night.
01541. You are preparing a weather report form, WS Form B-80 (Illustration D041NG). Your position is LAT 49°35' N, LONG 162°49' E. How would this be encoded?
- A. 99495, 11628
 - B. 94935, 96249
 - C. L4935, 16249
 - D. L496N, 1628E
01542. To determine your vessel's true heading, the magnetic heading is corrected for _____.
- A. magnetic anomalies (local disturbances)
 - B. deviation
 - C. variation
 - D. deviation and variation
01544. The height of wave crests can be increased by _____.
- A. a storm surge
 - B. a high pressure area
 - C. the jet stream
 - D. a cold front
01545. The change in the length of day becomes greater as latitude increases because of the _____.
- A. inclination of the diurnal circle to the equator
 - B. decreasing distance between the terrestrial meridians
 - C. increased obliquity of the celestial sphere
 - D. changing distance between the earth and the sun
01546. You are sailing south on the ICW when you sight a red nun buoy with a yellow triangle painted on it. Which of the following is TRUE?
- A. Geometric symbols such as squares and triangles replace letters and numbers on ICW aids to navigation.
 - B. The ICW and another waterway coincide in this geographical area.
 - C. The yellow triangle identifies a sharp turn (over 60°) in the channel.
 - D. This is an information or regulatory buoy that also has lateral significance.

01547. Which of the following light combinations is NOT used to indicate a navigational channel passing under a fixed bridge?
- A. Red lights on the LDB and green lights on the RDB
 - B. Three white lights in a vertical line
 - C. Two green lights in a range under the span
 - D. A fixed red light on each pier at the channel edge
01548. Illustration D042NG represents the symbols used on radiofacsimile weather charts. The symbol indicated at letter "K" represents a _____.
- A. hurricane
 - B. thunderstorm
 - C. convergence zone
 - D. convergence line
01549. What is the mark on a lead line indicating 3 fathoms?
- A. White linen rag
 - B. Red woolen rag
 - C. Three knots
 - D. Three strips of leather
01550. Cirrus clouds are indicated by what number in illustration D039NG?
- A. 1
 - B. 4
 - C. 5
 - D. 7
01551. In order to get the maximum benefit from the Gulf Stream, on a voyage between Houston and Philadelphia, you should navigate _____.
- A. about 75 miles east of Ormond Beach, FL
 - B. close inshore between Jupiter Inlet and Fowey Rocks, FL
 - C. along the 50-fathom curve while off the east coast of Florida
 - D. about 10 miles east of Cape Canaveral, FL
01552. Which sextant in illustration D043NG reads $30^{\circ}42.5'$?
- A. A
 - B. B
 - C. C
 - D. D
01553. Your DR position is LAT 20° N, LONG 50° W. From this position you take an RDF bearing on a vessel in LAT 25° N, LONG 45° W. The RDF bearing is 041.8° . The rhumb line bearing of the vessel is _____.
- A. 41.8° T
 - B. 42.9° T
 - C. 44.0° T
 - D. 44.8° T
01555. Under the U.S. Aids to Navigation System, a yellow buoy is a _____.
- A. safe water buoy
 - B. junction buoy
 - C. cardinal mark
 - D. special purpose mark

01556. The vertical distance from the tidal datum to the level of the water is the _____.
A. range of tide
B. charted depth
C. height of tide
D. actual water depth
01557. A doppler log in the volume reverberation mode indicates _____.
A. speed being made good
B. speed through the water
C. the set of the current
D. the depth of the water
01559. You are underway in the North Sea on course 216° T when you sight a buoy bearing 021° relative. Under the IALA Buoyage System, you are in the best navigable water if the buoy _____.
A. has a light characteristic of Q(6) + L Fl 15s
B. is horizontally banded yellow, black, yellow
C. has a double cone topmark with both points up
D. has a continuous very quick light
01560. Under the IALA-A and B Buoyage Systems, a buoy with alternating red and white vertical stripes indicates _____.
A. that there is navigable water all around
B. an isolated danger exists
C. that the preferred channel is to port
D. that the preferred channel is to starboard
01561. You are sailing south on the ICW when you sight a red nun buoy with a yellow square painted on it. Which of the following is TRUE?
A. The buoy is off station and should be ignored as a navigational mark.
B. The waterway in that area has shoaled and the available depth of water is less than the project depth.
C. ICW traffic should not proceed beyond the buoy unless the crossing waterway is clear of all traffic.
D. You should leave the buoy to port.
01562. What is the mark on a lead line indicating 2 fathoms?
A. Two knots
B. Two strips of leather
C. Two pieces of rope
D. No marking
01563. Neap tides occur only _____.
A. at a new or full Moon
B. when the Sun, Moon and Earth are in line
C. at approximately 28-day intervals
D. when the Moon is at quadrature
01564. Which of the following is a characteristic of cardinal marks?
A. Light rhythms indicating directional orientation
B. Vertical stripes
C. Square or triangular topmarks
D. Number - letter combinations for identification

01565. Determine the approximate geographic visibility of an object, with a height above the water of 85 feet, for an observer with a height of eye of 60 feet.
- A. 18.4 nm
 - B. 19.7 nm
 - C. 20.8 nm
 - D. 21.5 nm
01566. Illustration D042NG represents the symbols used on radiofacsimile weather charts. Which of these symbols indicates thunderstorms?
- A. I
 - B. K
 - C. L
 - D. M
01567. Buoys and day beacons exhibiting a yellow triangle or square painted on them are used _____.
- A. in minor harbors where the controlling depth is 10 feet or less
 - B. on isolated stretches of the ICW to mark undredged areas
 - C. where the ICW and other waterways coincide
 - D. at particularly hazardous turns of the channel
01568. You are approaching a vertical lift bridge. You know the span is fully open when _____.
- A. three white lights in a vertical line are lit
 - B. a red light starts to flash at about 60 times a minute
 - C. a yellow light is illuminated on the bridge pier
 - D. there is a range of green lights under the lift span
01569. Three or four feet of the total height of a storm surge in a hurricane can be attributed to _____.
- A. an increase in temperature
 - B. an increase in the wave period
 - C. the wind velocity
 - D. the decrease in atmospheric pressure
01570. The navigational triangle uses parts of two systems of coordinates, one of which is the horizon system and the other is the _____.
- A. terrestrial system
 - B. astronomical system
 - C. celestial equator system
 - D. ecliptic system
01571. Which sextant in illustration D043NG reads 29°42.7'?
- A. A
 - B. B
 - C. C
 - D. D

01573. Which of the following statements about satellite navigation is TRUE?
- A. While a fix can be generated by signals received from two satellites, three satellites are necessary for reliable accuracy.
 - B. The satellites are in equatorial orbits around the earth about 60° of longitude apart.
 - C. The satellite navigation system determines a fix by measuring the doppler shift of the radio signals from the satellite.
 - D. The ship's receiver cannot begin processing data until the antenna locks onto the satellite and starts continuous tracking.
01574. Information concerning the currents for the Pacific Coast of North America and Asia can be found in the ____.
- A. Nautical Almanac
 - B. Tide Tables
 - C. Tidal Current Tables
 - D. Ocean Current Tables
01575. Which statement is TRUE concerning "night effect" and the reception of radio signals?
- A. "Night effect" is most prevalent late at night.
 - B. During "night effect", polarization is at a minimum.
 - C. "Night effect" is caused by rapid changes in the ionosphere.
 - D. "Night effect" is caused by all of the polarized ground waves being vertical.
01576. You are entering an east coast port and see a buoy with a yellow triangle painted on it. This indicates ____.
- A. you are in the vicinity of the ICW
 - B. the buoy is a special mark
 - C. the buoy is off station
 - D. the buoy designates a sharp turn in the channel
01577. Yesterday your chronometer read 11h 59m 59s at 1200 GMT time tick. Today the chronometer reads 00h 00m 01s at the 1200 GMT tick. What is the chronometer rate?
- A. -1s
 - B. +1s
 - C. -2s
 - D. +2s
01578. The LMT of sunrise on the standard meridian is 0552. Your longitude is 99°15' E. What is your ZT of sunrise?
- A. 0512
 - B. 0529
 - C. 0552
 - D. 0615
01579. You get underway from the oil terminal at Marcus Hook, PA, at 0815 ZT (ZD +5) on 20 February 1983, enroute to sea. You will be turning for 11 knots. What is the approximate current when you are abreast Reedy Island?
- A. Slack
 - B. 2.0 knots ebbing
 - C. 1.5 knots flooding
 - D. 0.5 knot flooding

01580. What is the mark on a lead line indicating 1 fathom?
- A. One strip of leather
 - B. One knot
 - C. Leather with a hole
 - D. No marking
01581. Illustration D042NG represents the symbols used on radiofacsimile weather charts. The symbol indicated at letter "I" represents _____.
- A. rain showers
 - B. thunderstorms
 - C. snow storms
 - D. sand storms
01582. Sextant C in illustration D043NG reads _____.
- A. 30°45.9'
 - B. 29°56.0'
 - C. 29°52.0'
 - D. 29°47.5'
01583. The angle measured at the observer's meridian from the elevated pole, clockwise or counterclockwise up to 180°, to the vertical circle of the body is the _____.
- A. local hour angle
 - B. azimuth angle
 - C. meridian angle
 - D. longitude
01585. The sidereal day begins when the _____.
- A. first point of Aries is over the upper branch of the reference meridian
 - B. Sun is over the lower branch of the reference meridian
 - C. Sun is over the upper branch of the reference meridian
 - D. first point of Aries is over the lower branch of the reference meridian
01586. A green buoy has a yellow triangle on it. This is a(n) _____.
- A. information or regulatory buoy that has lateral significance
 - B. buoy that is off-station and is marked to warn mariners of its wrong position
 - C. dual purpose marking used where the ICW and other waterways coincide
 - D. buoy that was set in error and will be replaced with a red nun buoy
01587. In general, the most effective period for observing stars and planets occurs during the darker limit of _____.
- A. sunset
 - B. civil twilight
 - C. nautical twilight
 - D. astronomical twilight

01589. Which of the following statements about a lifeboat's standing lug sail is TRUE?
- A. When tacking, the tack must be shifted to the leeward side.
 - B. Sail area in heavy weather is reduced by passing the reef points around the yard.
 - C. The mainsail is triangular.
 - D. The tack is made fast to a point near the heel of the mast.
01590. Civil twilight starts at 1812 zone time on 26 August 1981, Your DR position at that time is LAT 21°06' S, LONG 14°56' W. Which statement concerning the planets available for evening sights is TRUE?
- A. Mars will be near the prime vertical in the eastern sky.
 - B. Venus may be identified from Saturn and Jupiter because it is the brightest.
 - C. Sights of Venus, Jupiter, and Saturn will yield a good three line fix.
 - D. A sight of either Jupiter, Saturn, or Venus will give a latitude line.
01593. The apparent altitude is the sextant altitude corrected for _____.
- A. instrument error and personal error
 - B. inaccuracies in the reading and reference level
 - C. index error, refraction, and dip
 - D. refraction and augmentation
01594. Illustration D042NG represents the symbols used on radiofacsimile weather charts. The symbol indicated at letter "P" represents _____.
- A. snow
 - B. hail
 - C. freezing rain
 - D. sleet
01595. The Light List indicates that a light has a nominal range of 8 miles and is 48 feet high. If the visibility is 6 miles and your height of eye is 35 feet, at what approximate distance will you sight the light?
- A. 15.0 miles
 - B. 12.4 miles
 - C. 8.0 miles
 - D. 5.9 miles
01596. You are sailing south on the ICW when you sight a red nun buoy with a yellow square painted on it. Which of the following is TRUE?
- A. You should leave the buoy on your port hand.
 - B. This buoy marks the end of the ICW in that geographic area.
 - C. The yellow is retroreflective material used to assist in sighting the buoy at night.
 - D. The yellow square is in error and it should be a yellow triangle.
01597. The dense black cumulonimbus clouds surrounding the eye of a hurricane are called _____.
- A. spiral rainbands
 - B. cloud walls
 - C. funnel clouds
 - D. cyclonic spirals

01599. The time interval between successive wave crests is called the _____.
- A. trough
 - B. period
 - C. frequency
 - D. epoch
01600. Zenith distance is equal to _____.
- A. $90^\circ - H_o$
 - B. $90^\circ - d$
 - C. $H_o + d$
 - D. $90^\circ - z$
01601. Sextant B in illustration D043NG reads _____.
- A. $30^\circ 51.0'$
 - B. $30^\circ 42.5'$
 - C. $30^\circ 47.5'$
 - D. $31^\circ 00.0'$
01604. Illustration D042NG represents the symbols used on radiofacsimile weather charts. Which of these symbols indicates freezing rain?
- A. M
 - B. N
 - C. O
 - D. P
01605. Which of the following is NOT a unit of a satellite navigation set aboard ship?
- A. Transmitter to trigger the satellite to broadcast
 - B. Data processor to process signals from satellite
 - C. Video display or printer to show generated data
 - D. Antenna to receive satellite signals
01606. Aids to navigation marking the intracoastal waterway can be identified by _____.
- A. the letters ICW after the aid's number or letter
 - B. yellow stripes, squares or triangles marked on them
 - C. white retroreflective material
 - D. the light characteristic and color for lighted aids
01608. When using a buoy as an aid to navigation which of the following should be considered?
- A. If the light is flashing the buoy should be considered to be in the charted location.
 - B. The buoy may not be in the charted position.
 - C. The buoy should be considered to be in the charted position if it has been freshly painted.
 - D. The buoy should be considered to always be in the charted position.
01610. When the navigational channel passes under a fixed bridge, the edges of the channel are marked on the bridge with what lights?
- A. Red lights
 - B. Three white lights in a vertical line
 - C. Red lights on the LDB and green lights on the RDB
 - D. Yellow lights

01611. Which of the following indicates a dual purpose buoy?
- A. Red buoy with a horizontal yellow band
 - B. Red and white vertically-striped buoy with a vertical yellow stripe
 - C. Red and white vertically-striped buoy with a red spherical topmark
 - D. Green buoy with a yellow square
01612. The strongest winds and heaviest rains in a hurricane are found in the _____.
- A. outer bands
 - B. eye
 - C. cloud walls
 - D. spiral rainbands
01613. Where would you find information concerning the duration of slack water?
- A. Tide Tables
 - B. Tidal Current Tables
 - C. American Practical Navigator
 - D. Sailing Directions
01615. Illustration D042NG represents the symbols used on radiofacsimile weather charts. Which of these symbols indicates snow?
- A. G
 - B. H
 - C. M
 - D. N
01616. Which picture in illustration D034NG shows a Morse (A) light?
- A. A
 - B. B
 - C. C
 - D. D
01617. The inner cloud bands of a hurricane, when viewed from a distance, form a mass of dense, black cumulonimbus clouds called the _____.
- A. bar of the storm
 - B. eye of the storm
 - C. funnel
 - D. front
01618. The Light List indicates that a light has a nominal range of 14 miles and is 26 feet high. If the visibility is 4 miles and your height of eye is 20 feet, at what approximate distance will you sight the light?
- A. 7.5 miles
 - B. 9.6 miles
 - C. 11.2 miles
 - D. 14.0 miles
01619. Sextant A in illustration D043NG reads _____.
- A. 29°42.7'
 - B. 29°45.7'
 - C. 29°51.8'
 - D. 30°47.2'

01620. You are at anchor in the anchorage at the entrance to Delaware Bay. If you weigh anchor at 1445 DST (ZD +4) on 24 July 1983 and proceed northbound enroute to Philadelphia at a speed of 10 knots, you will have _____.
- A. a flood current the entire trip
 - B. a flood current from Ship John Shoal Lt. to Philadelphia
 - C. an ebb current north of New Castle, DE
 - D. a weak flood between Reedy Island and Edgemoore
01622. The correction to be applied to a Loran-C reading when matching a skywave to a ground wave may be found _____.
- A. printed on loran charts covering areas where skywaves are used
 - B. in the Radio Aids to Navigation, PUB 117
 - C. in the Loran-C Correction Tables
 - D. Skywaves cannot be matched to ground waves in LORAN-C to produce a usable reading.
01631. Which picture in illustration D034NG shows an occulting light?
- A. A
 - B. B
 - C. C
 - D. D
01639. Sextant D in illustration D043NG reads _____.
- A. 30°47.5'
 - B. 29°47.5'
 - C. 29°42.5'
 - D. 29°41.6'
01645. The navigation data broadcast of a navigational satellite does NOT include information _____.
- A. about variation in the Doppler count
 - B. to enable the receiver to identify the satellite
 - C. on time according to the satellite clock
 - D. on the location of the satellite
01646. Which picture in illustration D034NG shows a flashing light?
- A. A
 - B. B
 - C. C
 - D. D
01655. Yesterday your chronometer read 11h 59m 59s at the 1200 GMT time tick. Today the chronometer reads 11h 59m 57s at the 1200 time tick. What is the chronometer rate?
- A. +2s
 - B. -2s
 - C. -3s
 - D. +3s
01662. Immediate notification of events affecting the Omega Navigation System is provided by the _____.
- A. Weekly Notice to Mariners
 - B. codes inserted into the Omega transmissions
 - C. voice broadcasts from WWV or WWVH
 - D. Navarea warning system

01668. What will NOT cause lane slip in the Decca Navigator?
- A. Skywave contamination
 - B. Different phase measurements
 - C. Electrical storms
 - D. External radio interference
01670. At extended distances from a pair of loran stations, _____.
- A. skywaves should not be used with LORAN-C
 - B. a skywave may be used only when matched to another skywave
 - C. a skywave may be matched to a ground wave
 - D. a skywave may be matched to a ground wave providing the ground wave comes from the master station
01671. Cirrus clouds are composed primarily of _____.
- A. ice crystals
 - B. water droplets
 - C. snow crystals
 - D. nitrogen
01672. Data relating to the direction and velocity of rotary tidal currents can be found in the _____.
- A. Mariner's Guide
 - B. Tidal Current Tables
 - C. Nautical Almanac
 - D. Tide Tables
01678. What information is NOT provided in broadcasts by the National Bureau of Standards?
- A. Storm warnings
 - B. Time announcements
 - C. Omega status information
 - D. NAVAREA warnings
01750. Clearance gauges at bridges indicate _____.
- A. the height of the tide
 - B. depth of water under the bridge
 - C. charted vertical clearance at mean low water
 - D. distance from the water to low steel of the bridge
01752. What is the major limitation in using the Sight Reduction Tables for Air Navigation Volume I (Pub. No. 249) for star sights?
- A. More accuracy is needed for celestial observations on board ship than what is tabulated.
 - B. Sights must be made at even time increments to benefit from the tables.
 - C. Only certain stars are included and sights must be limited to those stars.
 - D. Only first magnitude stars are tabulated.
01754. The dumping of refuse in a lock is permitted _____.
- A. when approved by the lockmaster
 - B. when locking downbound
 - C. at no time
 - D. during high water only

01757. Where would you obtain data on currents for areas of the world not covered by the U.S. National Ocean Service?
- A. In the Coast Pilot
 - B. In the Nautical Almanac
 - C. In the List of Lights
 - D. In the Sailing Directions
01758. Some observers prefer upper-limb sights to lower-limb sights of the sun at low altitudes because _____.
- A. any affects of unusual refraction are reduced
 - B. negative observed altitudes are avoided
 - C. the temperature-barometer correction is not applied to upper-limb sights
 - D. there is no horizontal parallax involved
01759. Which magnetic compass corrector(s) can be set while the vessel is on a heading of magnetic north or magnetic south?
- A. Quadrantal spheres
 - B. Heeling magnets
 - C. Flinders bar
 - D. Fore-and-aft magnets
01760. A doppler log in the bottom return mode indicates the _____.
- A. velocity of the current
 - B. bottom characteristics
 - C. depth of the water
 - D. speed over the ground
01762. In high latitudes, celestial observations can be made over a horizon covered with pack ice by bringing the sun tangent to the ice and _____.
- A. adding 30' of arc to the sight
 - B. using a dip correction based on the height of eye above the ice
 - C. doubling the semidiameter correction
 - D. using a dip correction from table 22 in Bowditch Vol. II
01766. You are approaching a lock and see a flashing amber light located on the lock wall. You should _____.
- A. stand clear of the lock entrance
 - B. approach the lock under full control
 - C. enter the lock as quickly as possible
 - D. hang off your tow on the lock wall
01768. A flashing red light displayed at a single lock means that the lock _____.
- A. is ready to use, but vessels must stand clear
 - B. is ready to use, and vessels may approach
 - C. cannot be made ready immediately, and vessels shall stand clear
 - D. cannot be made ready immediately, but vessels may approach

01769. Under the numbering system used by DMA, a three digit number may be used for _____.
- A. a small scale chart depicting a major portion of an ocean basin or a position plotting sheet
 - B. non-navigational materials such as radar plotting sheets
 - C. products issued periodically such as the Notice to Mariners
 - D. large scale charts of areas that are infrequently used for navigation such as the headwaters of rivers
01770. A doppler speed log indicates speed over ground _____.
- A. at all times
 - B. in the bottom return mode
 - C. in the volume reverberation mode
 - D. only when there is no current
01771. What type of precipitation is a product of the violent convection found in thunderstorms?
- A. Snow
 - B. Freezing Rain
 - C. Hail
 - D. Rain
01772. The GP of a body for a high altitude sight is determined from the declination and the _____.
- A. Greenwich hour angle
 - B. azimuth
 - C. zenith distance
 - D. right ascension
01774. Restricted areas at locks and dams are indicated by _____.
- A. flashing red lights upstream and fixed red lights downstream
 - B. yellow unlighted buoys
 - C. signs and/or flashing red lights
 - D. red daymarks upstream and green daymarks downstream
01778. Illustration D037NG represents a movable dam. If the wickets are down and there are open weirs due to high water, what light(s) will be shown at A if the lock walls and piers are not awash?
- A. One red light
 - B. Two red lights
 - C. Three red lights
 - D. One green light
01779. The Light List indicates that a light has a nominal range of 14 miles and is 26 feet high. If the visibility is 14 miles and your height of eye is 20 feet, at what approximate distance will you sight the light?
- A. 7.5 miles
 - B. 11.2 miles
 - C. 14.0 miles
 - D. 18.1 miles

01782. You are on course 027° T and take a relative bearing to a lighthouse of 220°. What is the true bearing to the lighthouse?
- A. 113°
 - B. 193°
 - C. 247°
 - D. 279°
01784. If your vessel were proceeding down river (descending), a green square marker with a green reflector border on the right bank would be a _____.
- A. mile board
 - B. dredging mark
 - C. passing daymark
 - D. crossing daymark
01786. You are downbound approaching a lock and see 3 green lights in a vertical line. This indicates _____.
- A. that the lock chamber is open and ready to receive your tow
 - B. that you should hold up until the signal changes to 2 green lights
 - C. the upstream end of the river wall
 - D. the upstream end of the land wall
01789. Illustration D036NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter F in the illustration?
- A. One red light
 - B. Two green lights
 - C. Three green lights
 - D. No light
01790. A doppler speed log indicates speed through the water _____.
- A. at all times
 - B. in the bottom return mode
 - C. in the volume reverberation mode
 - D. only when there is no current
01794. Why are low altitude sun sights not generally used?
- A. Errors due to unusual refraction may exist.
 - B. Sextants may have large errors at small angles of elevation.
 - C. Modern sight reduction tables are not complete for low altitudes below 5°.
 - D. The glare on the horizon causes irradiation errors.
01800. In order to insure that a RACON signal is displayed on the radar, you should _____.
- A. increase the brilliance of the PPI scope
 - B. turn off the interference controls on the radar
 - C. use the maximum available range setting
 - D. increase the radar signal output
01802. What is the major advantage of high altitude observations?
- A. Errors due to unusual parallax are eliminated.
 - B. The same body can be used for a fix from observations separated by several minutes.
 - C. The declination is the only information needed from the almanac.
 - D. The semidiameter correction of the sextant altitude is eliminated.

01804. Magnetic information on a chart may be _____.
A. found in the center(s) of the compass rose(s)
B. indicated by isogonic lines
C. found in a note on the chart
D. Any of the above
01806. Sometimes foreign charts are reproduced by DMA. On such a chart a wire dragged (swept) area may be shown in purple or _____.
A. green
B. red
C. magenta
D. yellow
01808. An orange and white buoy with an open-faced orange diamond on it indicates _____.
A. danger
B. vessels are excluded from the area
C. the buoy is a mooring buoy
D. operating restrictions are in effect
01809. What occurs when rising air cools to the dew point?
A. Advection fog
B. Humidity decreases
C. Winds increase
D. Clouds form
01812. The line of position should be plotted as a circle around the GP of the body when the Ho exceeds what minimum value?
A. 80°
B. 83°
C. 85°
D. 87°
01816. An orange and white buoy with a circle marked on it indicates _____.
A. danger
B. vessels are excluded from the area
C. a mooring buoy
D. operating restrictions are in effect
01818. In order to utilize the capacity of a lock to its maximum, pleasure craft are locked through with all of the following EXCEPT _____.
A. coal barges
B. oil barges
C. sand barges
D. cement barges
01820. Information on the operating times and characteristics of foreign radiobeacons can be found in what publication?
A. List of Lights
B. Coast Pilot
C. Sailing Directions
D. List of Radiobeacons

01822. What is the relative bearing of an object broad on the port bow?
- A. 315°
 - B. 330°
 - C. 345°
 - D. 360°
01824. Illustration D036NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter C in the illustration?
- A. One red light
 - B. Two green lights
 - C. Three green lights
 - D. No light
01826. Illustration D036NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter D in the illustration?
- A. One red light
 - B. Two green lights
 - C. Three green lights
 - D. No light
01829. Illustration D036NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter E in the illustration?
- A. One red light
 - B. Two green lights
 - C. Three green lights
 - D. No light
01830. A vessel heading NNW is on a course of _____.
- A. 274.5°
 - B. 292.0°
 - C. 315.5°
 - D. 337.5°
01832. What magnetic compass corrector(s) can be set while the vessel is on a heading of magnetic northeast or magnetic southeast?
- A. Flinders bar
 - B. Heeling magnets
 - C. Fore-and-aft magnets
 - D. Quadrantal spheres
01836. At evening stars, the first stars that should be observed are those with an azimuth in what quadrant?
- A. Southern
 - B. Western
 - C. Northern
 - D. Eastern

01838. The Light List shows a lighted aid to navigation on the left bank. This means that the light can be seen on the right side of a vessel _____.
- A. ascending the river
 - B. descending the river
 - C. crossing the river
 - D. proceeding towards sea
01840. A vessel heading NW is on a course of _____.
- A. 274.5°
 - B. 292.5°
 - C. 315.0°
 - D. 337.5°
01842. What is the major problem with taking high altitude observations?
- A. Possible errors due to unusual refraction may exist.
 - B. The tables are not as accurate due to inherent errors in the spherical triangle at high altitudes.
 - C. Rapidly changing altitudes make it difficult to get an accurate altitude.
 - D. It is difficult to establish the point where the sextant is vertical to the horizon.
01844. What is the relative bearing of an object sighted dead ahead?
- A. 015°
 - B. 090°
 - C. 180°
 - D. 360°
01848. The buoy symbol printed on your chart is leaning to the northeast. This indicates _____.
- A. you should stay to the north or east of the buoy
 - B. you should stay to the west or south of the buoy
 - C. the buoy is a major lighted buoy
 - D. nothing special for navigational purposes
01850. A vessel heading WNW is on a course of _____.
- A. 270.0°
 - ☒ B. 292.5°
 - C. 315.0°
 - D. 337.5°
01852. When plotting a circle of equal altitude for a high altitude sight, the radius of the circle is determined by the formula _____.
- A. $90^\circ - H_o$
 - B. $180^\circ - GHA$
 - C. $GHA - LHA$
 - D. $z - d$
01858. An orange and white buoy with a cross within a diamond marked on it indicates _____.
- A. danger
 - B. vessels are excluded from the area
 - C. an anchorage area
 - D. operating restrictions are in effect

01859. While proceeding downriver (descending) you sight a red diamond-shaped panel with small, red reflector squares in each corner on the left bank. Under the U.S. Aids to Navigation System on the Western Rivers this is a _____.
A. special purpose signal
B. passing daymark
C. crossing daymark
D. cable crossing
01860. A vessel heading WSW is on a course of _____.
A. 202.5°
B. 225.0°
C. 247.5°
D. 271.0°
01862. What is the relative bearing of an object broad on the starboard quarter?
A. 090°
B. 105°
C. 135°
D. 150°
01866. What term is used to describe a tank barge constructed with the structural framing inside the cargo tank and the side shell plating containing the cargo?
A. Single skin
B. Shell plated
C. Hopper type
D. Independent tank
01868. Illustration D036NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter A in the illustration?
A. One red light
B. Two red lights
C. Two green lights
D. Three green lights
01869. Illustration D036NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter B in the illustration?
A. One red light
B. Two green lights
C. Three green lights
D. No light
01870. A vessel heading SW is on a course of _____.
A. 202.5°
B. 225.0°
C. 247.5°
D. 270.0°

01879. A chart projection depicting the poles and a small area on either side of a connecting meridian, that is sometimes used for star charts, is the _____.
- A. azimuthal gnomonic projection
 - B. Lambert conformal projection
 - C. transverse Mercator projection
 - D. polyconic projection
01880. A vessel heading SSW is on a course of _____.
- A. 202.5°
 - B. 225.0°
 - C. 247.5°
 - D. 270.0°
01882. The GP of a body for a high altitude sight is determined from the Greenwich hour angle and the _____.
- A. circle of equal altitude
 - B. zenith distance
 - C. azimuth angle
 - D. declination
01883. Pressure gradient is a measure of _____.
- A. a high-pressure area
 - B. pressure difference over horizontal distance
 - C. pressure difference over time
 - D. vertical pressure variation
01884. If a sound signal is emitted from the oscillator of a fathometer, and two seconds elapse before the returning signal is picked up, what depth of water is indicated?
- A. 1648 fathoms
 - B. 1248 fathoms
 - C. 1048 fathoms
 - D. 824 fathoms
01885. A mooring buoy is painted _____.
- A. white with a blue band
 - B. yellow
 - C. any color that does not conflict with the lateral system
 - D. white with a green top
01886. What is the relative bearing of an object dead astern?
- A. 000°
 - B. 090°
 - C. 180°
 - D. 270°
01887. The Light List indicates that a light has a nominal range of 10 miles and is 11 feet high. If the visibility is 15 miles and your height of eye is 20 feet, at what approximate distance will you sight the light?
- A. 12.0 miles
 - B. 11.0 miles
 - C. 10.0 miles
 - D. 9.0 miles

01888. What is the relative bearing of an object broad on the starboard bow?
- A. 030°
 - B. 045°
 - C. 060°
 - D. 075°
01890. A vessel heading SSE is on a course of _____.
- A. 112.5°
 - B. 135.0°
 - C. 157.5°
 - D. 180.0°
01892. The shoreline shown on nautical charts of areas affected by large tidal fluctuations is usually the line of mean _____.
- A. lower-low water
 - B. low water
 - C. tide level
 - D. high-water
01898. The subregions of the United States Gulf and East Coasts are numbered 11, 12 and 13 within the chart numbering system. Which of the following chart numbers indicates a chart for either the Gulf or East coast?
- A. 14312
 - B. 25134
 - C. 21105
 - D. 11032
01899. What is the relative bearing of an object broad on the starboard beam?
- A. 045°
 - B. 060°
 - C. 075°
 - D. 090°
01900. A parallax correction is NOT applied to observations of the _____.
- A. stars
 - B. Moon
 - C. Sun
 - D. Planets
01902. Under the numbering system used by DMA, a four digit number may be used for _____.
- A. large scale charts of infrequently navigated areas such as the polar regions
 - B. charts of rivers or canal systems such as the Ohio River or Erie Canal
 - C. non-navigational materials, such as a chart correction template or maneuvering board
 - D. foreign charts reproduced by DMA
01904. In the horizon system of coordinates what is equivalent to the parallels of declination of the celestial equator system?
- A. Vertical circles
 - B. Parallels of altitude
 - C. Zenith distance
 - D. Azimuth angle

01905. In order to insure that the racon signal is visible on your 3 cm radar, the _____ .
- A. 10 cm radar should be placed on standby or turned off
 - B. gain control should be turned to maximum
 - C. radar should be stabilized, head up
 - D. rain clutter control should be off but, if necessary, may be on low
01906. In the horizon system of coordinates what is equivalent to latitude on the Earth?
- A. Altitude
 - B. Zenith
 - C. Declination
 - D. Zenith distance
01908. What is the brightest navigational planet?
- A. Saturn
 - B. Jupiter
 - C. Mars
 - D. Venus
01909. In the horizon system of coordinates what is equivalent to the equator on the Earth?
- A. Prime vertical circle
 - B. Principal vertical circle
 - C. Parallels of altitude
 - D. Horizon
01910. What sextant correction corrects the apparent altitude to the equivalent reading at the center of the Earth?
- A. Phase
 - B. Parallax
 - C. Semidiameter
 - D. Augmentation
01914. In the horizon system of coordinates what is equivalent to longitude on the Earth?
- A. Altitude
 - B. Azimuth angle
 - C. Horizon
 - D. Zenith distance
01916. The prime vertical is the reference point from which the angle of what type of observation is measured?
- A. Sextant angle
 - B. Azimuth
 - C. Amplitude
 - D. Local apparent noon
01918. The Moon appears larger in diameter at the zenith than when near the horizon. What is this called?
- A. Parallax in altitude
 - B. Augmentation
 - C. Horizontal parallax
 - D. Libration

01919. The nadir is the point on the celestial sphere that is _____.
A. 90° away from the zenith
B. over Greenwich
C. on the western horizon
D. directly below the observer
01920. Because the actual center of some planets may differ from the observed center, the navigator applies a correction known as the _____.
A. phase correction
B. refraction correction
C. semidiameter correction
D. augmentation correction
01922. In the North Sea area, you sight a buoy showing a quick white light with 9 flashes every 15 seconds. Which of the four topmarks shown in illustration D030NG would be fitted to the buoy?
A. A
B. B
C. C
D. D
01923. Little or no change in the barometric reading over a twelve hour period indicates _____.
A. stormy weather is imminent
B. that present weather conditions will continue
C. a defect in the barometer
D. increasing wind strength
01924. The point on the celestial sphere that is directly below an observer is the _____.
A. pole
B. nadir
C. node
D. zenith
01926. The prime vertical is the great circle on the celestial sphere that passes through the _____.
A. celestial poles and the zenith
B. zenith, nadir and the east point of the horizon
C. celestial poles and the celestial body
D. zenith, nadir and celestial body
01928. "Rotation" is the _____.
A. wobbling of the Earth about its axis
B. motion of bodies in the solar system relative to the stars
C. motion of a celestial body in its orbit
D. spinning of a celestial body about its axis
01930. The phase correction should be applied to sights of Venus and Mars _____.
A. during day time observations only
B. during twilight observations only
C. at all times
D. when observed at altitudes of less than 25°

01932. The zenith is the point on the celestial sphere that is _____.
A. 90° away from the poles
B. directly over the observer
C. on the eastern horizon
D. over Greenwich
01934. The great circle of the celestial sphere that passes through the zenith, nadir, and the eastern point of the horizon is the _____.
A. principal vertical
B. hour circle
C. celestial meridian
D. prime vertical
01936. The parallel of latitude at 66°33' N is the _____.
A. Tropic of Cancer
B. Tropic of Capricorn
C. Arctic Circle
D. ecliptic
01938. The azimuth angle of an amplitude is measured from the _____.
A. Greenwich meridian
B. hour circle
C. celestial meridian
D. prime vertical
01940. The diameter of the Sun and Moon as seen from the Earth varies slightly but averages about _____.
A. 1°
B. 52'
C. 32'
D. 15.5'
01942. In the horizon system of coordinates what is equivalent to the declination of the equator system?
A. Nadir
B. Azimuth angle
C. Altitude
D. Zenith distance
01944. In the horizon system of coordinates what is the equivalent to the celestial equator of the celestial equator system?
A. Horizon
B. Prime vertical circle
C. Prime meridian
D. Principal vertical circle
01946. When making landfall at night, you can determine if a light is a major light or an offshore buoy by _____.
A. the intensity of the light
B. checking the period and characteristics against the Light List
C. the color, because the buoy will have only a red or a green light
D. Any of the above can be used to identify the light.

01948. "Space motion" is the _____.
- A. action causing precession of the equinoxes
 - B. motion of bodies in the solar system relative to the stars
 - C. motion of a celestial body in its orbit
 - D. irregularity in the motion of the Earth caused by other celestial bodies
01949. "Revolution" is the _____.
- A. wobbling of the Earth about its axis
 - B. motion of bodies in the solar system relative to the stars
 - C. motion of a celestial body in its orbit
 - D. spinning of a celestial body about its axis
01950. The error in a sextant altitude caused by refraction is greatest when the celestial body is _____.
- A. high in the sky
 - B. near the horizon
 - C. rising
 - D. at or near transit
01951. Spring tides occur _____.
- A. when the moon is new or full
 - B. when the moon and sun have declination of the same name
 - C. only when the moon and sun are on the same sides of the earth
 - D. at the beginning of spring when the sun is over the equator
01952. The Moon is subject to four types of libration. Which of the following is NOT one of these types of libration?
- A. Libration in longitude
 - B. Geocentric libration
 - C. Diurnal libration
 - D. Physical libration
01954. In the horizon system of coordinates what is equivalent to the poles on the Earth?
- A. Celestial poles
 - B. Zenith, nadir
 - C. Ecliptic poles
 - D. Nodes
01956. In the North Sea area, you sight a buoy showing a quick white light with 6 flashes, followed by one long flash at 15 second intervals. Which of the four topmarks shown in illustration D030NG would be fitted to this buoy?
- A. A
 - B. B
 - C. C
 - D. D
01958. The spinning of a celestial body about an axis is known as _____.
- A. rotation
 - B. revolution
 - C. space motion
 - D. nutation

01960. Astronomical refraction causes a celestial body to appear _____.
A. to the left of its position in the Northern Hemisphere and to the right in the Southern Hemisphere
B. to the right of its position in the Northern Hemisphere and to the left in the Southern Hemisphere
C. higher than its actual position
D. lower than its actual position
01961. What kind of pressure systems travel in tropical waves?
A. Subsurface pressure
B. Terrastatic pressure
C. High pressure
D. Low pressure
01964. The great circle on the celestial sphere that passes through the zenith and the north and south poles is the _____.
A. hour circle
B. prime vertical
C. principal vertical
D. ecliptic
01968. The Earth has the shape of a(n) _____.
A. sphere
B. oblate spheroid
C. spheroid of revolution
D. oblate eggoid
01969. The precession of the equinoxes of the Earth is _____.
A. the gradual increase in the period of rotation caused by the effects of the Moon
B. the irregularity of the Earth's orbit caused by influences of the Sun and Moon
C. caused by the elliptical shape of the Earth's orbit
D. similar to a top spinning with its axis tilted
01970. The azimuth angle of a sun sight is always measured from the _____.
A. Greenwich meridian
B. zenith
C. elevated pole
D. first point of Aries
01972. The point on the celestial sphere that is directly over the observer is the _____.
A. node
B. pole
C. zenith
D. nadir
01974. Ocean currents are well defined and _____.
A. create large waves in the direction of the current
B. change direction 360° during a 24 hour period
C. remain fairly constant in direction and velocity throughout the year
D. are characterized by a light green color

01976. The Moon is nearest to the Earth at _____.
A. perigee
B. the vernal equinox
C. the new Moon
D. the full Moon
01978. The motion of a celestial body in its orbit around another body is known as _____.
A. rotation
B. revolution
C. space motion
D. nutation
01979. The principal vertical circle is that great circle on the celestial sphere that passes through the _____.
A. zenith and the celestial body
B. zenith and the north and south poles
C. poles and Greenwich
D. zenith and is parallel to the horizon
01980. Which angle of the navigational triangle is NOT used by the navigator?
A. Meridian angle
B. Azimuth angle
C. Position angle
D. All of the above are used
01982. In the horizon system of coordinates what is equivalent to the Greenwich hour angle of the celestial equator system?
A. Zenith distance
B. Coaltitude
C. Altitude
D. Azimuth
01984. When a dual purpose marking is used, the mariner following the Intracoastal Waterway should be guided by the _____.
A. color of the aid
B. shape of the aid
C. color of the top band
D. shape of the yellow mark
01986. The Moon is farthest from the Earth at _____.
A. the full Moon
B. apogee
C. the lunar solstice
D. quadrature
01987. An instrument useful in predicting fog is the _____.
A. sling psychrometer
B. microbarograph
C. anemometer
D. aneroid barometer

01988. The parallel of latitude at $23^{\circ}27'$ N is the _____.
- A. Tropic of Cancer
 - B. Tropic of Capricorn
 - C. Arctic Circle
 - D. ecliptic
01989. In the horizon system of coordinates what is the equivalent to the meridians on the Earth?
- A. Horizon
 - B. Hour circle
 - C. Vertical circles
 - D. Celestial meridians
01990. The navigational triangle uses parts of two systems of coordinates, one of which is the celestial equator system, the other system is the _____.
- A. terrestrial system
 - B. horizon system
 - C. astronomical system
 - D. ecliptic system
01992. The parallel of latitude at $23^{\circ}27'$ S is the _____.
- A. Tropic of Cancer
 - B. Tropic of Capricorn
 - C. Arctic Circle
 - D. ecliptic
01994. Fomalhaut is found in what constellation?
- A. Leo
 - B. Taurus
 - C. Pisces
 - D. Canis Major
01996. When approaching a lock entrance, the visual signal displayed when a single lock is ready for entrance is a flashing _____.
- A. red light
 - B. green light
 - C. amber light
 - D. white light
01999. The motion of bodies in the solar system relative to surrounding stars is known as _____.
- A. rotation
 - B. revolution
 - C. space motion
 - D. nutation
02000. A vessel heading SE is on a course of _____.
- A. 112.5°
 - B. 135.0°
 - C. 157.5°
 - D. 180.0°

02002. What term is used to describe a river barge designed to carry coal or any similar cargo not requiring weather protection?
- A. Single skin
 - B. Double skin
 - C. Open hopper
 - D. Deck barge
02004. The velocity of the wind, its steady direction, and the amount of time it has blown determines a wind driven current's _____.
- A. temperature
 - B. density
 - C. deflection
 - D. speed
02006. What is the relative bearing of an object broad on the port beam?
- A. 315°
 - B. 300°
 - C. 270°
 - D. 235°
02008. What term is used to describe a tank barge constructed with the structural framing outside the cargo tank and the cargo tank plating separated from the shell plating?
- A. Shell plated
 - B. Double skin
 - C. Hopper type
 - D. Independent tank
02010. A vessel heading ESE is on a course of _____.
- A. 112.5°
 - B. 135.0°
 - C. 157.5°
 - D. 180.0°
02014. Which stock number indicates a DMAHTC chart designed for coastwise navigation outside of outlying reefs and shoals?
- A. 19BC019243
 - B. WOPGN530
 - C. LCORR5873
 - D. 14XCO14902
02016. Which of the following statements about the Flinders bar of the magnetic compass is correct?
- A. It compensates for the error caused by the vertical component of the Earth's magnetic field.
 - B. It compensates for error caused by the heeling of a vessel.
 - C. It compensates for quadrantal deviation.
 - D. It is only needed in equatorial waters.
02018. What magnetic compass corrector(s) can be set while the vessel is on a heading of magnetic east or magnetic west?
- A. Quadrantal spheres
 - B. Heeling magnet
 - C. Flinders bar
 - D. Athwartships magnets

02019. At evening stars, the last stars that should be observed are those with an azimuth in what quadrant?
- A. Southern
 - B. Western
 - C. Northern
 - D. Eastern
02020. A vessel heading ENE is on a course of _____.
- A. 022.5°
 - B. 045.0°
 - C. 067.5°
 - D. 090.0°
02021. While on watch, you notice that the air temperature is dropping and is approaching the dew point. What type of weather should be forecasted?
- A. Hail
 - B. Heavy rain
 - C. Sleet
 - D. Fog
02022. The GP of a body for a high altitude sight is determined from the declination and the _____.
- A. right ascension
 - B. sidereal hour angle
 - C. Greenwich hour angle
 - D. observed altitude
02024. In the North Sea area, you sight a buoy with a quick light showing 3 flashes every 10 seconds. Which topmark in illustration D030NG would be fitted to this buoy under the IALA Buoyage Systems?
- A. A
 - B. B
 - C. C
 - D. D
02028. Which of the following stock numbers indicates a DMAHTC chart designed for navigation and anchorage in a small waterway?
- A. WOAZC17
 - B. LCORR5876
 - C. 15XHA15883
 - D. PILOT55
02030. A vessel heading NE is on a course of _____.
- A. 022.5°
 - B. 045.0°
 - C. 067.5°
 - D. 090.0°
02032. The subregions of the United States Gulf and East Coasts are numbered 11, 12, 13 within the chart numbering system. Which of the following chart numbers indicates a chart for either the Gulf or East Coast?
- A. 31301
 - B. 14311
 - C. 13305
 - D. 11121

02040. A vessel heading NNE is on a course of _____.
A. 022.5°
B. 045.0°
C. 067.5°
D. 090.0°
02041. Information on radiobeacons used for marine navigation in foreign waters will be found in the _____.
A. List of Lights
B. Radio Navigational Aids
C. Sailing Directions (Enroute)
D. Directory of Radiobeacons, Radio Direction Finders and Radar Stations
02042. At morning stars, the last stars that should be observed are those with an azimuth in which quadrant?
A. Eastern
B. Southern
C. Western
D. Northern
02044. What is the relative bearing of an object broad on the port quarter?
A. 195°
B. 225°
C. 240°
D. 265°
02048. You are upbound approaching a lock and dam and see two green lights in a vertical line. This indicates _____.
A. the downstream end of an intermediate wall
B. that a double lockage is in progress
C. the downstream end of the land wall
D. the navigable pass of a fixed weir dam
02049. At morning stars, the first stars that should be observed are those with an azimuth in which quadrant?
A. Eastern
B. Southern
C. Western
D. Northern
02050. The point where the vertical rise or fall of tide has stopped is referred to as _____.
A. slack water
B. the rip tide
C. the stand of the tide
D. the reverse of the tide
02052. Under the chart numbering system used by DMA, the first digit of a multi-digit number indicates _____.
A. the general geographic area
B. the general scale of the chart
C. whether it is a major or minor chart
D. the projection used to construct the chart

02054. Illustration D038NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter B in the illustration?
- A. One red light
 - B. Two green lights
 - C. Three green lights
 - D. No lights
02056. Illustration D038NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter C in the illustration?
- A. One red light
 - B. Two green lights
 - C. Three green lights
 - D. No lights
02058. Illustration D038NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter D in the illustration?
- A. One red light
 - B. Two green lights
 - C. Three green lights
 - D. No lights
02059. Illustration D038NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter E in the illustration?
- A. One red light
 - B. Two red lights
 - C. Two green lights
 - D. Three green lights
02060. What is the relative bearing of an object broad on the starboard quarter?
- A. 045°
 - B. 090°
 - C. 135°
 - D. 225°
02061. Fog is likely to occur when there is little difference between the dew point and the _____.
- A. relative humidity
 - B. air temperature
 - C. barometric pressure
 - D. absolute humidity
02062. Illustration D038NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter F in the illustration?
- A. One red light
 - B. Two red lights
 - C. Two green lights
 - D. Three green lights

02066. Illustration D037NG represents a moveable dam. If the wickets are down and there are open weirs due to high water, what light(s) will be shown at B if the lock walls and piers are not awash?
- A. One red light
 - B. Two red lights
 - C. Three red lights
 - D. No light
02067. The Light List indicates that a light has a nominal range of 10 miles and is 11 feet high. If the visibility is 5 miles and your height of eye is 20 feet, at what approximate distance will you sight the light?
- A. 6.3 miles
 - B. 7.4 miles
 - C. 8.4 miles
 - D. 9.0 miles
02068. Illustration number D037NG represents a moveable dam. If the wickets are down and there are open weirs due to high water, what light(s) will be shown at D if the lock walls and piers are not awash?
- A. One red light
 - B. Two red lights
 - C. Three red lights
 - D. One amber light
02069. Illustration D037NG represents a moveable dam. If a bear trap is open what will be displayed at the lock to indicate this condition?
- A. A flashing amber light
 - B. A white circular disc
 - C. A red diamond
 - D. Two amber lights
02070. What is the relative bearing of an object on the port beam?
- A. 045°
 - B. 090°
 - C. 180°
 - D. 270°
02072. Illustration D037NG represents a movable dam. If a bear trap is open what will be displayed at the lock to indicate this condition?
- A. An amber light under a red light
 - B. A white square
 - C. A green triangle
 - D. A yellow pentagon
02074. When approaching a lock and at a distance of not more than mile, vessels desiring a single lockage shall sound which signal?
- A. One long blast followed by one short blast
 - B. One short blast followed by one long blast
 - C. Two short blasts
 - D. Two long blasts

02078. If a towboat requires a double lockage it shall give which sound signal at a distance of not more than one mile from the lock?
- A. One short blast followed by two long blasts
 - B. One long blast followed by one short blast
 - C. Two long blasts followed by one short blast
 - D. One long blast followed by two short blasts
02079. Permission to enter the riverward chamber of twin locks is given by the lockmaster and consists of which sound signal?
- A. One short blast
 - B. Two short blasts
 - C. One long blast
 - D. Two long blasts
02080. You are on course 030° T. The relative bearing of a lighthouse is 45°. What is the true bearing?
- A. 015°
 - B. 075°
 - C. 255°
 - D. 345°
02081. When taking bearings on two known objects ashore, the BEST fix is obtained when the angle between the lines of position is _____.
- A. 30°
 - B. 45°
 - C. 60°
 - D. 90°
02082. You are holding position above Gallipolis Lock and Dam when you hear two long blasts of the horn from the lock. This indicates that you should _____.
- A. enter the riverward lock
 - B. hold position until two more upbound tows have locked through
 - C. enter the landward lock
 - D. hold position until the lower gates are closed
02084. You are approaching Gallipolis Lock and Dam. The traffic signal light is flashing red. You should _____.
- A. hold your position and not attempt to enter the lock
 - B. approach the lock slowly under full control
 - C. proceed at normal speed to enter the lock
 - D. None of the above
02086. You are downbound on the Ohio River locking through Greenup. The chamber has been emptied and the lower gates are open. You hear one short blast of the whistle from the lock. You should _____.
- A. leave the lock
 - B. hold up until another tow enters the adjacent lock
 - C. tie off to the guide wall until the river is clear of traffic
 - D. hold in the lock chamber due to a malfunction with the gate

02087. The Light List indicates that a light has a nominal range of 20 miles and is 52 feet high. If the visibility is 20 miles and your height of eye is 20 feet, at what approximate distance will you sight the light?
- A. 33.0 nm
 - B. 20.0 nm
 - C. 13.5 nm
 - D. 8.5 nm
02089. Permission to leave the riverward chamber of twin locks is given by the lockmaster and consists of which sound signal?
- A. One short blast
 - B. Two short blasts
 - C. One long blast
 - D. Two long blasts
02090. You are underway in an area where the charted depth is 8 fathoms. You compute the height of tide to be -4.0 feet. The draft of your vessel is 5.0 feet. You determine the depth of the water beneath your keel to be _____.
- A. 39 feet
 - B. 43 feet
 - C. 47 feet
 - D. 57 feet
02092. Descending boats, while awaiting their turn to enter a lock, shall NOT block traffic from the lock. They shall be above the lock by at LEAST _____.
- A. 100 feet
 - B. 200 feet
 - C. 300 feet
 - D. 400 feet
02096. You must draw a plotting sheet covering latitudes 38° S to 40° S and longitudes 1° E to 3° W. If the distance between latitude 38° S to 40° S is 12 inches, what is the distance between the meridians of 1° of longitude?
- A. 3.9 inches
 - B. 4.1 inches
 - C. 4.4 inches
 - D. 4.7 inches
02098. What magnetic compass corrector(s) can be set while the vessel is on a heading of magnetic east or magnetic west?
- A. Quadrantal spheres
 - B. Heeling magnets
 - C. Fore-and-aft magnets
 - D. Athwartships magnets
02100. You are underway in a vessel with a draft of 7.0 feet. The charted depth for your position is 9 fathoms. You compute the height of tide to be +3.0 feet. You determine the depth of the water beneath your keel to be _____.
- A. 32 feet
 - B. 41 feet
 - C. 50 feet
 - D. 64 feet

02102. The subregions of the United States Gulf and East Coasts are numbered 11, 12, 13 within the chart numbering system. Which of the following chart numbers indicates a chart for either the Gulf or East Coast?
- A. 21214
 - B. 11314
 - C. 14313
 - D. 14114
02104. An orange and white buoy giving location information will be marked with what symbol?
- A. Open-faced diamond
 - B. Diamond with a cross
 - C. Circle
 - D. Square or rectangle
02110. You are underway in a vessel with a draft of 6.0 feet. You are in an area where the charted depth of the water is 4 fathoms. You would expect the depth of water beneath your keel to be approximately _____.
- A. 12 feet
 - B. 18 feet
 - C. 24 feet
 - D. 30 feet
02119. Which of the following stock numbers indicates a DMAHTC chart designed for fixing positions at sea and DR plotting while on a long voyage?
- A. WOAGN520
 - B. PILOT16
 - C. 16BCO16212
 - D. WOPZC5245
02120. If a chart indicates the depth of water to be 6 fathoms and your draft is 6.0 feet, what is the depth of the water under your keel? (Assume the actual depth and charted depth to be the same)
- A. 6.0 feet
 - B. 26.5 feet
 - C. 30.0 feet
 - D. 56.5 feet
02124. You must draw a plotting sheet covering latitudes 45° N to 49° N and longitudes 179° E to 178° W. If the distance between latitude 45° N to 49° N is 20 inches, what is the distance between the meridians of 1° of longitude?
- A. 2.9 inches
 - B. 3.2 inches
 - C. 3.4 inches
 - D. 3.7 inches
02126. Your chart indicates that there is an isolated rock and names the rock using vertical letters. This indicates the _____.
- A. rock is visible at low water springs only
 - B. rock is a hazard to deep draft vessels only
 - C. rock is dry at high water
 - D. exact position of the rock is doubtful

02130. You are underway and pass by a lighthouse. Its light, which was white since you first sighted it, changes to red. This indicates _____.
A. the light is characterized as alternating flashing
B. the lighthouse has lost power and has switched to emergency lighting
C. the identifying light characteristic of the lighthouse
D. you have entered an area of shoal water or other hazard
02131. The white lights in a vertical line on a multiple-span bridge indicate _____.
A. the main channel
B. the draw span is inoperable
C. the river is obstructed under that span
D. scaffolding under the span is reducing the vertical clearance
02134. The Moon and Sun are in line over your meridian. Tomorrow when the Sun is over your meridian, the Moon will be _____.
A. over the meridian too
B. about 12° east of the meridian
C. about 6° west of the meridian
D. about 11° west of the meridian
02140. The visible range marked on charts for lights is the _____.
A. minimum distance at which the light may be seen with infinite visibility
B. minimum distance at which the light may be seen based on a 12 mile distance to visible horizon
C. maximum distance the light may be seen restricted by the height of the light and the curvature of the earth
D. maximum distance at which a light may be seen in clear weather with 10 miles visibility
02144. Yesterday your chronometer read 02h 59m 58s at the 1500 GMT time tick. Today the chronometer reads 03h 00m 02s at the 1500 GMT time tick. What is the chronometer error?
A. 02s fast
B. 03h 00m 02s fast
C. +3s
D. -3s
02150. On a mercator chart, 1 nautical mile is equal to _____.
A. 1 minute of longitude
B. 1 degree of longitude
C. 1 minute of latitude
D. 1 degree of latitude
02152. Permanent magnetism is found in _____.
A. hard iron
B. soft iron
C. vertical iron only
D. horizontal iron only

02158. Permanent magnetism is caused by _____.
- A. operation of electrical equipment and generators on board ship
 - B. the earth's magnetic field affecting the ship's hard iron during construction
 - C. the horizontal component of the earth's magnetic field acting on the horizontal soft iron
 - D. the vertical component of the earth's magnetic field acting on the vertical soft iron
02159. Induced magnetism is found in _____.
- A. hard iron
 - B. soft iron
 - C. vertical iron only
 - D. horizontal iron only
02160. Information for updating nautical charts is primarily found in the _____.
- A. Notice to Mariners
 - B. Coast Pilots
 - C. nautical chart catalogs
 - D. Sailing Directions
02161. Yesterday your chronometer read 03h 01m 56s at the 1500 GMT time tick. Today your chronometer read 03h 01m 58s at the 1500 GMT time tick. What is the chronometer error?
- A. 03h 01m 58s fast
 - B. 01m 58s fast
 - C. +2s
 - D. -2s
02162. The new Moon cannot be seen because the Moon is _____.
- A. in the opposite direction of the Sun
 - B. below the horizon
 - C. between the Earth and the Sun
 - D. at quadrature
02164. The line connecting the points of the earth's surface where there is no dip is the _____.
- A. agonic line
 - B. magnetic equator
 - C. isodynamic
 - D. isopor
02168. By convention, the north pole of a magnet is painted _____.
- A. red
 - B. blue
 - C. white
 - D. black
02170. The temperature at which the air is saturated with water vapor and below which condensation of water vapor will occur is referred to as _____.
- A. precipitation point
 - B. vapor point
 - C. dew point
 - D. absolute humidity

02172. The shoreline on charts of confined coastal waters, where there is little tidal influence, may be the line of mean _____.
- A. lower-low water
 - B. low water
 - C. water level
 - D. low-water springs
02174. By convention, the Earth's north magnetic pole is colored _____.
- A. red
 - B. white
 - C. blue
 - D. black
02178. The Flinders bar and the quadrantal spheres should be tested for permanent magnetism at what interval?
- A. They are not subject to permanent magnetism; no check is necessary.
 - B. Semiannually
 - C. Annually
 - D. Every five years
02179. A vessel is heading magnetic northwest and its magnetic compass indicates a heading of 312°. What action should be taken to remove this error during compass adjustment?
- A. If the quadrantal spheres are all of the way out, replace them with smaller spheres.
 - B. If the quadrantal spheres are all of the way out, remove one of the spheres.
 - C. Move the spheres out
 - D. Any of the above
02180. Relative humidity is defined as _____.
- A. the maximum vapor content the air is capable of holding
 - B. the minimum vapor content the air is capable of holding
 - C. the ratio of the actual vapor content at the current temperature to the air's vapor holding capability
 - D. the relation of the moisture content of the air to barometric pressure
02184. By convention, the southseeking ends of a compass' magnets are colored _____.
- A. blue
 - B. red
 - C. white
 - D. black
02186. You have completed the magnetic compass adjustments on magnetic east and magnetic south. The vessel is now steady on magnetic west but the compass reads 266°. What action should be taken?
- A. Adjust the compass with the athwartships magnets until the compass reads 268°
 - B. Adjust the compass with the fore-and-aft magnets until the compass reads 270°
 - C. Adjust the compass with the quadrantal spheres until the compass reads 274°
 - D. Adjust the compass with the fore-and-aft magnets until the compass reads 268°

02188. A vessel is heading magnetic north and its magnetic compass indicates a heading of 003°. What action should be taken to remove this error during compass adjustment?
- A. If the red ends are to starboard the athwartships magnets should be lowered.
 - B. If the blue ends are forward the fore-and-aft magnets should be raised.
 - C. If the red ends are to starboard and the tray is at the top add some athwartships magnets.
 - D. If the blue ends are aft the fore-and-aft magnets should be raised.
02189. A vessel is heading magnetic north and its magnetic compass indicates a heading of 003°. What action should be taken to remove this error during compass adjustment?
- A. If the blue ends are to port and the athwartships tray is at the bottom, you should add some more magnets.
 - B. If the blue ends are to port and the athwartships tray is at the top, you should add some more magnets.
 - C. If the red ends are to port, you should lower the athwartships tray.
 - D. If the red ends are to port and the tray is at the bottom, you should raise the tray.
02190. Clouds are classified according to their _____.
- A. size
 - B. moisture content
 - C. altitude and how they were formed
 - D. location in a front
02191. The chart indicates the variation was 3°45' E in 1988, and the annual change is increasing 6'. If you use the chart in 1991 how much variation should you apply?
- A. 3°27' E
 - B. 3°27' W
 - C. 3°45' E
 - D. 4°03' E
02194. A vessel is heading magnetic north and its magnetic compass indicates a heading of 003°. What action should be taken to remove this error during compass adjustment?
- A. If the red ends of the magnets are forward you should lower the fore-and-aft magnets.
 - B. If the blue ends of the magnets are forward you should lower the fore-and-aft magnets.
 - C. If the blue ends of the magnets are to port and the athwartships tray is at the bottom you should reverse the magnets.
 - D. If the blue ends of the magnets are to port and the athwartships tray is at the top you should add some magnets.
02196. A vessel is heading magnetic northwest and its magnetic compass indicates a heading of 312°. What action should be taken to remove this error during compass adjustment?
- A. If the quadrantal spheres are all the way out, replace them with smaller spheres.
 - B. If the quadrantal spheres are all the way in, replace them with larger spheres.
 - C. Move the spheres in
 - D. Any of the above

02198. Opposition occurs when _____.
- A. the Sun, Earth, and Moon are at right angles
 - B. the Sun's declination is 0° and is moving south
 - C. an inferior planet is at the maximum angle to the line of sight to the Sun
 - D. the Earth is between a planet and the Sun
02199. Denebola is found in what constellation?
- A. Hydrus
 - B. Leo
 - C. Centaurus
 - D. Aquila
02200. Cloud formations are minimal when the _____.
- A. surface temperature and temperature aloft are equal
 - B. surface temperature and temperature aloft differ greatly
 - C. barometric pressure is very low
 - D. relative humidity is very high
02202. You have completed the magnetic compass adjustments on magnetic east and magnetic south. The vessel is now steady on magnetic west but the compass reads 276° . What action should be taken?
- A. Adjust the compass with the athwartships magnets until the compass reads 264°
 - B. Adjust the compass with the fore-and-aft magnets until the compass reads 273°
 - C. Adjust the compass with the quadrantal spheres until the compass reads 270°
 - D. Adjust the compass with the athwartships magnets until the compass reads 273°
02203. You get underway from the shipyard in Chester, PA, at 1515 DST (ZD +4) on 6 August 1983, enroute to sea. You will be turning for eight knots. What current can you expect at Fourteen Foot Bank Light?
- A. Slack
 - B. 1.3 knots ebbing
 - C. 1.7 knots ebbing
 - D. 0.5 knot ebbing
02207. Yesterday your chronometer read 11h 59m 58s at the 1200 GMT time tick. Today your chronometer reads 00h 00m 00s at the 1200 time tick. What is the chronometer rate?
- A. Nil
 - B. 12h
 - C. +2s
 - D. -2s
02209. You have completed the magnetic compass adjustments on magnetic east and magnetic south. The vessel is now steady on magnetic west but the compass reads 266° . You should now adjust the compass until it reads _____.
- A. 268°
 - B. 270°
 - C. 274°
 - D. Do not adjust the compass; just record the error

02210. A dead reckoning (DR) plot _____.
A. ignores the effect of surface currents
B. is most useful when in sight of land
C. must be plotted using magnetic courses
D. may be started at an assumed position
02212. What information is found in the chart title?
A. Number of the chart
B. Edition date
C. Variation information
D. Survey information
02214. By convention, the Earth's south magnetic pole is colored _____.
A. blue
B. black
C. white
D. red
02215. You are required to enter a lock on your voyage. Information on the lock regulations, signals, and radio communications can be found in _____.
A. the publication "Key to the Locks"
B. Bowditch
C. Corps of Engineers Information Bulletin
D. Coast Pilot
02216. A vessel is heading magnetic northwest and its magnetic compass indicates a heading of 317°. What action should be taken to remove this error during compass adjustment?
A. Move the quadrantal spheres out
B. Move the quadrantal spheres in
C. If the spheres are in as far as possible replace them with smaller spheres
D. If the spheres are out as far as possible replace them with smaller spheres
02219. A vessel is heading magnetic northwest and its magnetic compass indicates a heading of 317°. What action should be taken to remove this error during compass adjustment?
A. If the quadrantal spheres are in as far as possible replace them with larger spheres.
B. If the quadrantal spheres are in as far as possible replace them with smaller spheres.
C. Move the quadrantal spheres out.
D. If the spheres are in as far as possible remove one of the spheres.
02220. A dead reckoning (DR) plot _____.
A. must utilize magnetic courses
B. must take set and drift into account
C. should be replotted hourly
D. should be started each time the vessel's position is fixed

02222. By convention, the south pole of a magnet is painted _____.
A. red
B. blue
C. white
D. black
02224. By convention, the north seeking ends of a compass' magnets are colored _____.
A. black
B. blue
C. red
D. white
02226. Upper limb observations of the Moon are used more frequently than those of the Sun because of the location of the Moon in the sky and the _____.
A. lesser distance between the Earth and the Moon
B. phase of the Moon
C. rapid change in declination of the Moon
D. effects of augmentation and horizontal parallax
02229. A vessel is heading magnetic north and its magnetic compass indicates a heading of 003°. What action should be taken to remove this error during compass adjustment?
A. If the red ends are to port the athwartships magnets should be raised.
B. If the blue ends are to port the athwartships magnets should be raised.
C. If the red ends are forward the fore-and-aft magnets should be lowered.
D. If the blue ends are forward the fore-and-aft magnets should be raised.
02230. A nautical mile is a distance of approximately how much greater than or less than a statute mile?
A. 1/4 less
B. 1/7 less
C. 1/4 greater
D. 1/7 greater
02232. A vessel is heading magnetic north and its magnetic compass indicates a heading of 003°. What action should be taken to remove this error during compass adjustment?
A. If the red ends are to starboard you should raise the athwartships tray.
B. If the red ends are to starboard, and the athwartships tray is at the bottom, you should remove some magnets.
C. If the red ends are to port, and the athwartships tray is at the top, you should reverse the magnets.
D. If the red ends are to port, and the athwartships tray is at the top, you should lower the tray.

02234. A vessel is heading magnetic north and its magnetic compass indicates a heading of 003°. What action should be taken to remove this error during compass adjustment?
- A. Move the quadrantal spheres closer to the compass
 - B. Raise the heeling magnet if the red end is up
 - C. Remove some of the Flinders bar
 - D. Raise or lower the athwartships magnets
02236. Which is true of a downbound power-driven vessel, when meeting an upbound vessel on the Western Rivers?
- A. She has the right of way.
 - B. She shall propose the manner of passage.
 - C. She shall propose the place of passage.
 - D. All of the above
02238. A vessel is heading magnetic northwest and its magnetic compass indicates a heading of 312°. What action should be taken to remove this error during compass adjustment?
- A. If the quadrantal spheres are all of the way out replace them with larger spheres.
 - B. If the quadrantal spheres are all of the way in replace them with larger spheres.
 - C. Move the spheres out
 - D. Any of the above
02239. A flashing green light displayed at a single lock means that the lock is _____.
- A. ready for entrance
 - B. ready for entrance, but gates cannot be closed completely
 - C. being made ready for entrance
 - D. not ready for entrance
02240. If you observe a buoy off station you should _____.
- A. fill out and mail CG Form 2692 to the nearest Coast Guard office
 - B. appear in person at the nearest Coast Guard office
 - C. notify Coast Guard Headquarters in Washington, DC
 - D. immediately contact the nearest Coast Guard office by radiotelephone
02242. A vessel is heading magnetic north and its magnetic compass indicates a heading of 356°. What action should be taken to remove this error during compass adjustment?
- A. If the red ends of the magnets are to port you should lower the athwartships tray.
 - B. If the red ends of the magnets are aft you should raise the fore-and-aft tray.
 - C. If the blue ends of the magnets are to port, and the athwartships tray is at the top, you should remove some of the magnets.
 - D. If the blue ends of the magnets are aft you should raise the fore-and-aft tray.
02244. Capella is found in what constellation?
- A. Gemini
 - B. Auriga
 - C. Libra
 - D. Crab

02246. The speed of an ocean current is dependent on _____.
A. the density of the water
B. the air temperature
C. the presence of a high pressure area near it
D. underwater soil conditions
02248. A vessel is heading magnetic north and its magnetic compass indicates a heading of 356°. What action should be taken to remove this error during compass adjustment?
A. If the red ends of the magnets are to port you should raise the athwartships tray.
B. If the red ends of the magnets are to port, and the athwartships tray is at the top, you should add some more magnets.
C. If the red ends of the magnets are to starboard you should lower the athwartships tray.
D. If the red ends of the magnets are to starboard, and the athwartships tray is at the top, you should add some more magnets.
02250. The most important information to be obtained from a barometer is the _____.
A. difference between the reading of the two pointers, which shows wind direction
B. last two figures of the reading of the pointer, such as .87, .76, or .92
C. present reading of the pressure, combined with the changes in pressure observed in the recent past
D. weather indications printed on the dial (such as "cold, wet, etc.") under the pointer
02252. The vertical angle between the horizontal and the magnetic line of force is the _____.
A. elevation
B. magnetic angle
C. vertical angle
D. dip
02254. A rock and sand structure extending from the bank of the river toward the channel is known as a _____.
A. wingdam
B. towhead
C. cutoff
D. landwall
02256. The constellation that contains Polaris is _____.
A. Orion
B. Cassiopeia
C. Ursa Minor
D. Corona Borealis
02258. The primary use of apparent time in marine navigation is to _____.
A. calculate sunrise or sunset
B. determine zone time
C. enter an almanac
D. determine the of time of meridian transit

02259. A vessel is heading magnetic northwest and its magnetic compass indicates a heading of 317°. What action should be taken to remove this error during compass adjustment?
- A. If the quadrantal spheres are out as far as possible replace them with smaller spheres.
 - B. If the quadrantal spheres are in as far as possible remove one of the spheres.
 - C. If the quadrantal spheres are in as far as possible replace them with smaller spheres.
 - D. Move the quadrantal spheres in.
02260. A device trailed astern of a vessel to measure distance traveled through the water is a(n) _____.
- A. ammeter
 - B. patent log
 - C. trim tab
 - D. drogue
02262. The Milky Way is an example of a _____.
- A. cluster
 - B. galaxy
 - C. nova
 - D. nebula
02264. The revision date of a chart is printed on what area of the chart?
- A. Top center
 - B. Lower-left corner
 - C. Part of the chart title
 - D. Any clear area around the neat line
02266. It is difficult to determine which limb of the Moon is fully illuminated _____.
- A. when the Moon is low in the sky at rising or setting
 - B. at the new Moon phase
 - C. when taking Moon sights during daylight
 - D. when the terminator is nearly vertical
02268. What condition exists at perigee?
- A. The Earth is farthest from the Sun.
 - B. The Earth, Sun, and Moon are in line.
 - C. The Earth, Sun, and Moon are at right angles.
 - D. The Moon is closest to the Earth.
02269. One of the factors which affects the circulation of ocean currents is _____.
- A. humidity
 - B. varying densities of water
 - C. vessel traffic
 - D. the jet stream
02270. The lubber's line of a magnetic compass _____.
- A. always shows true north direction
 - B. indicates the vessel's heading
 - C. is always parallel to the vessel's transom
 - D. is located on the compass card

02272. Mars will not be visible _____.
- A. at elongation angles near 180°
 - B. from quadrature to opposition
 - C. at conjunction
 - D. at opposition
02274. A vessel is heading magnetic east and its magnetic compass indicates a heading of 086° . What action should be taken to remove this error during compass adjustment?
- A. If the red ends of the magnets are to port you should lower the athwartships tray.
 - B. If the blue ends of the magnets are to port, and the athwartships tray is at the top, you should reverse the magnets.
 - C. If the red ends of the magnet are aft, and the fore-and-aft tray is at the top, you should add some more magnets.
 - D. If the red ends of the magnets are aft you should lower the fore-and-aft tray.
02276. A vessel is heading magnetic east and its magnetic compass indicates a heading of 086° . What action should be taken to remove this error during compass adjustment?
- A. If the blue ends of the magnets are aft, and the fore-and-aft tray is at the top, you should add some magnets.
 - B. If the blue ends of the magnets are aft you should lower the fore-and-aft tray.
 - C. If the blue ends of the magnets are aft, and the fore-and-aft tray is at the top, you should reverse the magnets.
 - D. If the blue ends of the magnets are forward, and the fore-and-aft tray is at the bottom, you should add some magnets.
02277. The Light List indicates that a light has a nominal range of 20 miles and is 52 feet high. If the visibility is 12.0 miles and your height of eye is 20 feet, at what approximate distance will you sight the light?
- A. 21.5 miles
 - B. 20.0 miles
 - C. 13.7 miles
 - D. 12.0 miles
02278. Superior conjunction occurs when _____.
- A. the Sun is at maximum declination north or south
 - B. a planet crosses the external plane of the ecliptic
 - C. the Sun is between the Earth and a planet
 - D. two planets are in line
02279. Antares is found in what constellation?
- A. Scorpio
 - B. Corvus
 - C. Libra
 - D. Corona Borealis
02280. Which of the following would influence a magnetic compass?
- A. Electrical wiring
 - B. Iron pipe
 - C. Radio
 - D. All of the above

02282. You have completed the magnetic compass adjustments on magnetic east and magnetic south. The vessel is now steady on magnetic west but the compass reads 276° . You should now adjust the compass until it reads _____.
- A. 264°
 - B. 270°
 - C. 273°
 - D. Do not adjust the compass; just record the error
02284. Bellatrix is found in what constellation?
- A. Canis Minor
 - B. Gemini
 - C. Taurus
 - D. Orion
02286. Which of the following light signals indicates that you have permission to enter a lock on the Ohio River?
- A. Steady red
 - B. Flashing amber
 - C. Steady green
 - D. Flashing green
02288. A mean sun is used as the reference for solar time for three reasons. Which reason is NOT a cause for use of a mean sun?
- A. The motion of the apparent sun is along the ecliptic.
 - B. Measurement of time is along the celestial equator.
 - C. The speed of the Earth's revolution is not constant.
 - D. There are variations in the Earth's rotational speed.
02289. The constellation that contains the pointer stars is _____.
- A. Orion
 - B. Ursa Major
 - C. the Southern Cross
 - D. Pegasus
02290. Magnets in the binnacles of magnetic compasses are used to reduce the effect of _____.
- A. deviation
 - B. variation
 - C. local attraction
 - D. All of the above
02292. The points on the earth's surface where the magnetic dip is 90° are _____.
- A. along the magnetic equator
 - B. connected by the isoclinal line
 - C. the isopors
 - D. the magnetic poles
02294. What celestial body may sometimes be observed in daylight?
- A. New Moon
 - B. Saturn
 - C. Sirius
 - D. Venus

02296. A variable star is one that _____.
A. exhibits a change in magnitude
B. has a changing declination
C. is increasing in SHA
D. is also known as a red giant
02298. The period of rotation of the Moon on its axis is _____.
A. about 19 years
B. 365 days
C. about 27.3 days
D. 24 hours
02299. What condition exists at apogee?
A. The Earth is closest to the Sun.
B. The Moon is farthest from the Sun.
C. The Earth is farthest from the Moon.
D. The Moon is between the Earth and the Sun.
02300. When a magnetic compass is not in use for a prolonged period of time it should _____.
A. be shielded from direct sunlight
B. be locked into a constant heading
C. have any air bubbles replaced with nitrogen
D. have the compensating magnets removed
02302. You must draw a plotting sheet covering latitudes 38° N to 41° N and longitudes 179° E to 178° W. If the distance between latitude 38° N to 41° N is 15.5 inches, what is the distance between the meridians of 1° of latitude?
A. 4.0 inches
B. 4.4 inches
C. 4.9 inches
D. 5.3 inches
02304. The Moon is subject to four types of libration. Which of the following is NOT one of these types of libration?
A. Libration in longitude
B. Diurnal libration
C. Vertical libration
D. Libration in latitude
02306. In the North Sea area, you sight a buoy showing a quick white light with 9 flashes every 15 seconds. Which of the four topmarks shown in illustration D031NG would be fitted to the buoy?
A. A
B. B
C. C
D. D
02308. The points where the Sun is at 0° declination are known as _____.
A. solstices
B. equinoxes
C. perigee
D. apogee

02309. The plane of the ecliptic is inclined to the plane of the celestial equator by what angle?
- A. $00^{\circ}23'$
 - B. $23^{\circ}27'$
 - C. $45^{\circ}00'$
 - D. $90^{\circ}00'$
02310. Which weather instrument measures atmospheric pressure?
- A. Beaufort scale
 - B. Anemometer
 - C. Sling psychrometer
 - D. Barometer
02312. Mars is only seen at two phases, one of which _____.
- A. is the full phase
 - B. is conjunction
 - C. occurs only at sunset or sunrise
 - D. occurs at or near 0° elongation
02314. A vessel is heading magnetic east and its magnetic compass indicates a heading of 086° . What action should be taken to remove this error during compass adjustment?
- A. If the blue ends of the magnets are forward you should raise the fore-and-aft tray.
 - B. If the blue ends of the magnets are aft you should lower the fore-and-aft tray.
 - C. If the blue ends of the magnets are aft, and the fore-and-aft tray is at the top, you should add some magnets.
 - D. If the blue ends of the magnets are aft, and the fore-and-aft tray is at the bottom, you should reverse the magnets.
02316. Elongation becomes zero at _____.
- A. opposition
 - B. west quadrature
 - C. apogee
 - D. inferior conjunction
02317. The Light List indicates that a light has a nominal range of 13 miles and is 36 feet high. If the visibility is 7.0 miles and your height of eye is 25 feet, at what approximate distance will you sight the light?
- A. 10.0 miles
 - B. 12.9 miles
 - C. 14.2 miles
 - D. 17.0 miles
02318. Miaplacidus is found in what constellation?
- A. Puppis
 - B. Hydrus
 - C. Centaurus
 - D. Carina
02319. In low latitudes, the new Moon will always rise at about _____.
- A. sunrise
 - B. 1200 LMT
 - C. sunset
 - D. 2400 LMT

02320. The type of current which will have the greatest effect on the course made good for your vessel is _____.
- A. one flowing in the same direction as your course steered
 - B. one flowing in the opposite direction as your course steered
 - C. one that flows at nearly right angles to your course steered
 - D. a rotary current in which the direction of current flow constantly changes
02322. You have completed the magnetic compass adjustments on magnetic east and magnetic south. The vessel is now steady on magnetic north but the compass reads 356°. What action should be taken?
- A. Use the fore-and-aft magnets and adjust the compass until it reads 358°
 - B. Use the athwartships magnets and adjust the compass until it reads 358°
 - C. Use the fore-and-aft magnets and adjust the compass until it reads 000°
 - D. Use the quadrantal spheres and adjust the compass until it reads 000°
02324. Deneb is found in what constellation?
- A. Cygnus
 - B. Pegasus
 - C. Ursa Major
 - D. Andromeda
02326. A double star is a star that _____.
- A. has a declination equal to twice that of the Sun
 - B. comprises two stars that appear close together
 - C. is twice as bright as a single star
 - D. suddenly becomes much brighter and then fades
02328. Universal time (UTI) is another name for _____.
- A. sidereal time
 - B. Greenwich mean time
 - C. ephemeris time
 - D. atomic time
02329. In low latitudes, a last quarter moon will always rise at about _____.
- A. sunrise
 - B. 1200 LMT
 - C. sunset
 - D. 2400 LMT
02330. Your are heading in a northerly direction when you come across an easterly current. Your vessel will _____.
- A. be pushed to starboard
 - B. be pushed to port
 - C. decrease in engine speed
 - D. remain on course

02332. Magnetic dip is a measurement of the angle between the _____.
- A. geographic pole and the magnetic pole
 - B. lubber's line and true north
 - C. horizontal and the magnetic line of force
 - D. compass heading and the magnetic heading
02334. Other than the Sun and Moon, the brightest object in the sky is _____.
- A. Sirius
 - B. Canopus
 - C. Venus
 - D. Jupiter
02335. The Light List indicates that a light has a nominal range of 13 miles and is 36 feet high. If the visibility is 17 miles and your height of eye is 25 feet, at what approximate distance will you sight the light?
- A. 10.0 miles
 - B. 12.9 miles
 - C. 14.2 miles
 - D. 17.0 miles
02336. The period of revolution of the Moon is _____.
- A. 24 hours
 - B. about 27.3 days
 - C. 365 days
 - D. about 19 years
02338. A group of stars which appear close together and form a striking configuration such as a person or animal is a _____.
- A. cluster
 - B. shower
 - C. constellation
 - D. galaxy
02340. What is a "Special Warning"?
- A. An urgent message concerning a vessel in distress
 - B. A weather advisory about unusual meteorological or oceanographic phenomena hazardous to vessels
 - C. A broadcast disseminating an official government proclamation affecting shipping
 - D. A radio navigational warning concerning a particularly hazardous condition affecting navigation
02342. What happens because of augmentation?
- A. The Moon appears larger as the elevation increases.
 - B. The Sun appears larger when viewed against the darker background of the horizon.
 - C. The horizon appears elevated when observing a bright Sun or Moon at low altitudes.
 - D. The Moon appears larger at the full Moon.

02344. The Moon is subject to four types of libration. Which of the following is NOT one of these types of libration?
- A. Libration in latitude
 - B. Diurnal libration
 - C. Physical libration
 - D. Horizontal libration
02346. The first point of Aries is the point where the Sun is at _____.
- A. maximum declination north
 - B. maximum declination south
 - C. 0° declination going to northerly declinations
 - D. 0° declination going to southerly declinations
02348. Under the IALA cardinal system, a mark with a quick light showing 9 flashes every 15 seconds indicates that the safest water is on the _____.
- A. north side of the mark
 - B. west side of the mark
 - C. east side of the mark
 - D. south side of the mark
02349. The summer solstice is the point where the Sun is at _____.
- A. maximum declination north
 - B. maximum declination south
 - C. 0° declination going to northerly declinations
 - D. 0° declination going to southerly declinations
02350. The principal advantage of NAVTEX radio warnings is that _____.
- A. they can be used by mariners who do not know Morse code
 - B. only an ordinary FM radio is necessary to receive these warnings
 - C. information on a given topic is only broadcast at specified times
 - D. they cover a broad spectrum of the radio band allowing reception on almost any type of receiver
02352. When a superior planet is at 90° elongation, it is also at _____.
- A. conjunction
 - B. opposition
 - C. quadrature
 - D. transit
02354. A vessel is heading magnetic east and its magnetic compass indicates a heading of 093°. What action should be taken to remove this error during compass adjustment?
- A. If the blue ends of the magnets are to port you should raise the athwartships tray.
 - B. If the red ends of magnets are to port you should lower the athwartships tray.
 - C. If the red ends of the magnets are aft you should lower the fore-and-aft tray.
 - D. If the blue ends of the magnets are forward you should raise the fore-and-aft tray.

02356. As observed from the Earth, the angle between lines from the Earth to the Sun and the Earth to an inferior planet is known as _____.
A. elongation
B. conjunction
C. opposition
D. quadrature
02358. Altair is found in what constellation?
A. Hercules
B. Cygnus
C. Aquila
D. Capricorn
02360. What U.S. agency is responsible for NAVAREA warnings?
A. Coast Guard
B. National Oceanic and Atmospheric Administration
C. National Ocean Service
D. Defense Mapping Agency
02362. You have completed the magnetic compass adjustments on magnetic east and magnetic south. The vessel is now steady on magnetic north but the compass reads 004°. What action should be taken?
A. Use the Flinders bar and adjust the compass until it reads 002°
B. Use the fore-and-aft magnets and adjust the compass until it reads 000°
C. Use the athwartships magnets and adjust the compass until it reads 002°
D. Use the athwartships magnets and adjust the compass until it reads 000°
02364. The immediate surroundings of what constellation contain the most first magnitude stars?
A. Libra
B. Cassiopeia
C. Pegasus
D. Orion
02366. The major problem with Moon sights is the _____.
A. rapid changes in GHA and declination introduce errors into the calculations
B. lack of a well defined limb at certain positions in the sky
C. approximations used in the solution caused by the variable horizontal parallax
D. augmentation effect caused by the relatively short distance to the Moon
02369. What magnetic compass corrector(s) CANNOT be set on a heading of magnetic east or magnetic west?
A. Heeling magnet
B. Flinders bar
C. Fore-and-aft magnets
D. All of the above can be set on magnetic east or magnetic west headings.

02370. In the United States, short-range radio navigational warnings are broadcast by the _____.
- A. Coast Guard
 - B. Corps of Engineers
 - C. NOAA
 - D. harbor master of the nearest port
02372. In the North Sea area, you sight a buoy showing a quick white light showing 6 flashes followed by one long flash at 15 second intervals. Which of the four topmarks illustrated in diagram D031NG would be fitted to this buoy?
- A. A
 - B. B
 - C. C
 - D. D
02374. The largest of the navigational planets is _____.
- A. Mars
 - B. Venus
 - C. Jupiter
 - D. Saturn
02375. The shortest distance between any two points on earth defines a _____.
- A. small circle
 - B. great circle
 - C. rhumb line
 - D. hyperbola
02376. A large group of stars revolving around a center is known as a _____.
- A. cluster
 - B. shower
 - C. constellation
 - D. galaxy
02378. Which of the following light signals indicates that you may approach the lock?
- A. Flashing red
 - B. Flashing amber
 - C. Steady amber
 - D. Steady green
02379. The winter solstice is the point where the Sun is at _____.
- A. maximum declination north
 - B. maximum declination south
 - C. 0° declination going to northerly declinations
 - D. 0° declination going to southerly declinations
02380. The navigation regulations applicable to a U.S. inland waterway can be found in the _____.
- A. Notices to Mariners
 - B. Channel Reports
 - C. Sailing Directions
 - D. Coast Pilots

02382. What causes geocentric parallax?
- A. The varying distance between the Earth and Moon.
 - B. The change in the Moon's position relative to the stars when viewed from the Earth's surface, as compared to the Earth's center.
 - C. The rapid change in declination of the Moon causes a rotational oscillation of its axis.
 - D. The nearness of the Moon causes an apparent increase in diameter as its altitude increases.
02384. On U.S. charts, you can tell if a named feature such as a rock (i.e. Great Eastern Rock in Block Island Sound) is submerged by the _____.
- A. color of ink used to print the name
 - B. style of type used to print the name
 - C. dashed circle around the feature
 - D. magenta circle around the feature
02386. The path that the Sun appears to take among the stars is the _____.
- A. zodiac
 - B. Tropic of Cancer in the Northern Hemisphere
 - C. ecliptic
 - D. line of apsides
02387. You are on a voyage from New Orleans to Boston and navigating off the Florida coast. You will get the greatest benefit from the Gulf Stream if you navigate _____.
- A. about 5 miles east of Cape Canaveral
 - B. about 15 miles east of Daytona
 - C. along the 50-fathom curve
 - D. about 20 miles east of Jupiter Inlet
02388. The reference point for determination of GMT is the passage of the mean sun over what line?
- A. First point of Aries
 - B. Observer's meridian
 - C. 0° longitude
 - D. 180° longitude
02389. The autumnal equinox is the point where the Sun is at _____.
- A. maximum declination north
 - B. maximum declination south
 - C. 0° declination going to northerly declinations
 - D. 0° declination going to southerly declinations
02390. You are in a channel in U.S. waters near an industrial plant with a load/discharge facility for barges. You hear a siren being sounded at the facility. What does this indicate?
- A. There is danger at the facility due to a fire or cargo release.
 - B. A towboat with a hazardous cargo barge is being moved to or from the facility.
 - C. The facility is warning a barge to shut down transfer operations due to weather conditions (electrical storms, tornado, etc.).
 - D. A barge at the facility has commenced loading or discharging operations.

02392. The point where the Sun is at maximum declination north or south is _____.
- A. aphelion
 - B. perihelion
 - C. an equinox
 - D. a solstice
02394. A vessel is heading magnetic east and its magnetic compass indicates a heading of 093°. What action should be taken to remove this error during compass adjustment?
- A. If the red ends of the magnets are aft, and the fore-and-aft tray is at the top, you should remove some magnets.
 - B. If the red ends of the magnet are aft, and the fore-and-aft tray is at the bottom, you should reverse the magnets.
 - C. If the red ends of the magnets are aft you should raise the fore-and-aft tray.
 - D. If the blue ends of the magnets are forward you should remove some magnets from the fore-and-aft tray.
02396. Perihelion is the point where the Sun _____.
- A. is nearest to the Earth
 - B. is farthest from the Earth
 - C. is on the opposite side of the Earth from the Moon
 - D. and Moon and Earth are in line
02399. Which statement about the time diagram in illustration D008NG is TRUE?
- A. The Greenwich date is one day later than your date.
 - B. The diagram is valid only if you are in the southern hemisphere.
 - C. The LHA of the Sun is approximately 40°.
 - D. The diagram represents a morning Sun sight.
02400. You are in a channel in U.S. waters near an industrial plant with a load/discharge facility for barges. You see an emergency rotating flashing light on the facility light up. What does this indicate?
- A. A barge at the facility has commenced transferring a hazardous cargo.
 - B. A barge carrying a hazardous cargo is mooring or unmooring at the facility.
 - C. The facility is warning a barge to shut down transfer operations due to weather conditions (electrical storm, tornado, hurricane, etc.).
 - D. There is danger at the facility due to a fire or cargo release.
02402. You have completed the magnetic compass adjustments on magnetic east and magnetic south. The vessel is now steady on magnetic north but the compass reads 356°. You should now adjust the compass until it reads _____.
- A. 358°
 - B. 000°
 - C. 002°
 - D. 004°
02404. The dividing meridian between zone descriptions +7 and +8 is _____.
- A. 105°00' W
 - B. 112°30' W
 - C. 117°00' W
 - D. 120°30' W

02406. The dividing meridian between zone descriptions +4 and +5 is ____.
- A. 67°30' W
 - B. 90°00' W
 - C. 67°30' E
 - D. 75°00' E
02408. What is the equivalent of 42 min. 48 sec. in arc units?
- A. 21°24'
 - B. 18°16'
 - C. 11°19'
 - D. 10°42'
02409. You are approaching the first of two drawbridges that span a narrow channel. The second drawbridge is close to the first. What signals should you sound?
- A. Sound the request-for-opening signal for the first bridge only, who will notify the second bridge of your approach
 - B. Sound the request-for-opening signal twice in succession to indicate you must pass through both bridges
 - C. Sound the request-for-opening signal, pause for about 10 seconds, then sound two prolonged blasts.
 - D. Sound the request-for-opening signal and, after the bridge acknowledges it, sound the request-for-opening signal for the second bridge.
02410. A facility used for the discharge of a cargo of a particular hazard, such as chlorine, butane or ethane, must have what to warn water traffic of an immediate danger during fire or cargo release.
- A. An emergency boat and crew
 - B. A siren or rotating flashing light
 - C. Flashing red lights located one-half mile upstream and downstream of the facility
 - D. Buoys with flashing lights controlled from shore, located one-half mile upstream and downstream of the facility
02412. The permanent magnetism of a vessel may change in polarity due to _____.
- A. being moored for a long time on one heading
 - B. being struck by lightning
 - C. steaming from the north magnetic hemisphere to the south magnetic hemisphere
 - D. loading a homogenous magnetic cargo such as steel plate, iron bars, etc.
02414. You must construct a Mercator plotting sheet on a piece of paper measuring 20" by 28". The area includes latitude 38° S to 43° S and longitude 178° E to 175° W. Allow a one-half inch neat line on all sides. What is the maximum distance between each degree of longitude that will permit the area of the plotting sheet to be drawn within the stated limitations?
- A. 2.6 inches
 - B. 2.9 inches
 - C. 3.2 inches
 - D. 3.5 inches

02416. An orange and white buoy indicating a vessel-exclusion area will be marked with what symbol?
- A. Open-faced diamond
 - B. Diamond with a cross
 - C. Circle
 - D. Square
02418. While proceeding downriver, you sight a red triangular-shaped daymark on the left bank. Under the U.S. Aids to Navigation System on the Western Rivers this is a _____.
- A. special purpose signal
 - B. passing daymark
 - C. mark with no lateral significance
 - D. crossing daymark
02419. A backlash below a lock is defined as a _____.
- A. current setting your vessel on the wall
 - B. current setting into the lock chamber
 - C. an eddy working along the lower guide wall
 - D. current setting counterclockwise
02420. You are on course 355° T and take a relative bearing of a lighthouse of 275°. What is the true bearing to the lighthouse?
- A. 080°
 - B. 085°
 - C. 280°
 - D. 270°
02422. The dimmest stars that could be reasonably used for navigational purposes are of what magnitude?
- A. First
 - B. Third
 - C. Sixth
 - D. Tenth
02424. Under the IALA-B Buoyage System, when entering from seaward a lateral system buoy to be left to starboard may display which topmark in illustration D046NG?
- A. A
 - B. B
 - C. C
 - D. D
02426. You are in charge of a power-driven vessel crossing a river on the Western Rivers. You must keep out of the way of _____.
- A. a sail vessel descending the river
 - B. a power-driven vessel ascending the river
 - C. a vessel restricted in its ability to maneuver crossing the river
 - D. Any of the above

02428. If your vessel were proceeding up river (ascending), the port side of the channel would be marked according to the U. S. Aids to Navigation System on the Western Rivers by _____.
- A. green can buoys
 - B. red can buoys
 - C. green nun buoys
 - D. red nun buoys
02429. The lock chamber is 600 feet X 110 feet. Your towboat is 150 feet X 35 feet. Which of these tows will require a double lockage?
- A. A set-over single
 - B. 4 standard barges abreast next to your boat's head and 3 jumbo abreast in the lead
 - C. 6 jumbo (3 abreast and 2 long) with a standard on each side of your boat
 - D. 9 jumbo barges
02430. You are on course 222° T and take a relative bearing of a lighthouse of 025°. What is the true bearing to the lighthouse?
- A. 197°
 - B. 247°
 - C. 315°
 - D. 335°
02432. A time diagram is a diagram of the celestial sphere as observed from above the _____.
- A. south celestial pole
 - B. north celestial pole
 - C. observer's meridian
 - D. Greenwich meridian
02434. A vessel is heading magnetic east and its magnetic compass indicates a heading of 093°. What action should be taken to remove this error during compass adjustment?
- A. If the red ends of the magnets are aft you should lower the fore-and-aft tray.
 - B. If the red ends of the magnets are forward, and the fore-and-aft tray is at the bottom, you should remove some magnets.
 - C. If the red ends of the magnets are to port you should raise the athwartships tray.
 - D. If the red ends of the magnets are to port, and the athwartships tray is at the top, you should reverse the magnets.
02436. Aphelion is the point where the Sun _____.
- A. and Moon and Earth form a right angle
 - B. and Moon and Earth are in line
 - C. crosses the celestial equator
 - D. is farthest from the Earth

02437. When daylight savings time is kept, the times of tide and current calculations must be adjusted. One way of doing this is to _____.
- A. add 15' to the standard meridian when calculating the time differences
 - B. apply no correction as the times at the reference stations are adjusted for daylight savings time
 - C. add one hour to the times listed for the reference stations
 - D. subtract one hour from the times listed for the subordinate stations
02438. The radar control that reduces weak echoes out to a limited distance from the ship is the _____.
- A. sensitivity time control (sea-clutter control)
 - B. receiver gain control
 - C. brilliance control
 - D. fast time constant (differentiator)
02439. Which statement about the time diagram in illustration D008NG is TRUE?
- A. You are in east longitude.
 - B. The Sun is setting for you.
 - C. Your date is different from the Greenwich date.
 - D. The GHA is approximately 160°.
02440. You are on course 357° T and take a relative bearing of a lighthouse of 180°. What is the true bearing to the lighthouse?
- A. 003°
 - B. 227°
 - C. 177°
 - D. 363°
02442. You have completed the magnetic compass adjustments on magnetic east and magnetic south. The vessel is now steady on magnetic north but the compass reads 004°. You should now adjust the compass until it reads _____.
- A. 356°
 - B. 358°
 - C. 000°
 - D. 002°
02444. What is the equivalent of 0°48' in time units?
- A. 2 min. 12 sec.
 - B. 2 min. 42 sec.
 - C. 3 min. 02 sec.
 - D. 3 min. 12 sec.
02446. What is the equivalent of 47 min. 20 sec. in arc units?
- A. 8°27'
 - B. 11°50'
 - C. 13°42'
 - D. 13°56'

02448. What is the equivalent of 37 min. 32 sec. in arc units?
- A. 4°47'
 - B. 6°38'
 - C. 7°41'
 - D. 9°23'
02449. You are approaching a drawbridge that will open at any time upon request. What signal should you sound to request the bridge be opened?
- A. Two short blasts
 - B. One short, one prolonged, one short blast
 - C. One prolonged, one short blast
 - D. Two prolonged blasts
02450. You are on course 180° T and take a relative bearing of a lighthouse of 225°. What is the true bearing to the lighthouse?
- A. 045°
 - B. 135°
 - C. 180°
 - D. 270°
02452. The permanent magnetism of a vessel may change in strength due to _____.
- A. the nature of the cargo being carried
 - B. changes in heading
 - C. major structural repair
 - D. Any of the above
02454. Illustration D037NG represents a moveable dam. If the wickets are down and there are open weirs due to high water, what light(s) will be shown at C if the lock walls and piers are not awash?
- A. One red light
 - B. Two red lights
 - C. Three red lights
 - D. One amber light
02456. An orange and white buoy marking an area where operating restrictions are in effect will be marked with what symbol?
- A. Open-faced diamond
 - B. Diamond with a cross
 - C. Circle
 - D. Rectangle
02458. In the U.S. Aids to Navigation System on the Western Rivers, the light characteristic of group flashing (2) is used for lights on _____.
- A. the right descending bank
 - B. the left descending bank
 - C. preferred channel buoys
 - D. daymarks with no lateral significant
02459. The controlling depth of the river is _____.
- A. the minimum depth of the river prescribed in the channel maintenance program
 - B. the edge of a dredged channel
 - C. the highest level to which the river may rise without flooding
 - D. the least available water in a channel which limits the draft of boats and tows

02460. You are on course 344° T and take a relative bearing of a lighthouse of 270°. What is the true bearing to the lighthouse?
- A. 016°
 - B. 074°
 - C. 090°
 - D. 254°
02462. Under ideal viewing conditions, the dimmest star that can be seen with the unaided eye is of what magnitude?
- A. First
 - B. Third
 - C. Fourth
 - D. Sixth
02464. Under the IALA-A Buoyage System, when entering from seaward a lateral system buoy to be left to port may display which topmark in illustration D046NG?
- A. A
 - B. B
 - C. C
 - D. D
02466. On the Western Rivers, a vessel crossing a river must _____.
- A. only keep out of the way of a power-driven vessel descending the river
 - B. keep out of the way of any vessel descending the river
 - C. keep out of the way of a power-driven vessel ascending or descending the river
 - D. keep out of the way of any vessel ascending or descending the river
02468. Under the U.S. Aids to Navigation System on the Western Rivers, the buoys marking the starboard side of the channel when going upstream will be _____.
- A. black
 - B. red
 - C. green
 - D. yellow
02469. A tow that is properly aligned to pass through a narrow opening between two bridge piers is "_____".
- A. on course
 - B. headed fair
 - C. holding on
 - D. in shape
02470. You are on course 344° T and take a relative bearing of a lighthouse of 090°. What is the true bearing to the lighthouse?
- A. 016°
 - B. 074°
 - C. 254°
 - D. 270°

02472. The Sun is closest to the Earth in what month?
- A. October
 - B. July
 - C. April
 - D. January
02474. A vessel is heading magnetic north and its magnetic compass indicates a heading of 356° . What action should be taken to remove this error during compass adjustment?
- A. If the blue ends of the magnets are to port, and the athwartships tray is at the top, you should remove some of the magnets.
 - B. If the blue ends of the magnets are to starboard, and the athwartships tray is at the bottom, you should remove some magnets.
 - C. If the red ends of the magnets are to port, and the athwartships tray is at the bottom, you should reverse the magnets.
 - D. If the blue ends of the magnets are to starboard, you should raise the athwartships tray.
02476. At meridian transit, the diagram used by a navigator to illustrate the angles involved is based on the _____.
- A. celestial equator as observed from above the south celestial pole
 - B. celestial equator as observed from above the north celestial pole
 - C. plane of the observer's meridian
 - D. plane of the Greenwich meridian
02478. On 23 August 1981 you observe a back sight of the upper limb of the Sun as seen through the sextant's scope. The sextant altitude (hs) is $116^\circ 42.8'$. The height of eye is 56 feet and the index error is $2.0'$ on the arc. What is the observed altitude (H_o)?
- A. $63^\circ 42.0'$
 - B. $63^\circ 38.0'$
 - C. $63^\circ 19.4'$
 - D. $62^\circ 49.6'$
02479. The equation of time measures the _____.
- A. difference between local apparent time and Greenwich apparent time
 - B. longitude in time units
 - C. difference between sidereal time and local time at the Greenwich meridian
 - D. time between the passage of the mean sun and the apparent sun over a meridian
02480. You are on course 277° T and take a relative bearing of a lighthouse of 045° . What is the true bearing to the lighthouse?
- A. 038°
 - B. 232°
 - C. 315°
 - D. 322°

02482. When a vessel changes course from one cardinal heading to another cardinal heading while adjusting the compass, what action should be taken?
- The course change should be made rapidly to prevent transient induced magnetism while passing the intercardinal headings.
 - After the new heading is reached, the vessel should steam on that course for at least two minutes before the adjustment.
 - During the course change, you should gently tap the compass to remove any error caused by friction on the pivot bearing.
 - After steadying on the new heading, the compass card should be slewed by a magnet and allowed to oscillate freely to remove any gaussian error.
02484. What is the equivalent of 1°53' in time units?
- 3 min. 16 sec.
 - 5 min. 28 sec.
 - 6 min. 43 sec.
 - 7 min. 32 sec.
02486. What is the equivalent of 23 min. 20 sec. in arc units?
- 16°40'
 - 12°32'
 - 9°28'
 - 5°50'
02488. In which publication could you find information concerning the minimum lighting required for bridges on U.S. waters?
- Chart No. 1.
 - Code of Federal Regulations
 - Mississippi River Systems Light List
 - Notice to Mariners
02489. You are approaching a drawbridge and must pass through during a scheduled closure period. What signal should you sound?
- Five short blasts
 - Two prolonged, two short blasts
 - Three prolonged blasts
 - Three short blasts, two prolonged blasts
02490. A vertex of the navigational triangle is NOT located at the _____.
- elevated pole
 - celestial body
 - zenith
 - coaltitude
02492. A star that suddenly becomes several magnitudes brighter and then gradually fades is a _____.
- double star
 - variable star
 - nova
 - nebula

02494. You must construct a Mercator plotting sheet on a piece of paper measuring 24" by 30". The area includes latitude 28° N to 35° N and longitude 175° E to 178° W. Allow a three-quarter inch neat line on all sides. What is the maximum distance between each degree of longitude that will permit the area of the plotting sheet to be drawn within the stated limitation?
- A. 3.40 inches
 - B. 3.22 inches
 - C. 3.03 inches
 - D. 2.91 inches
02496. An orange and white buoy marking a danger area will have what symbol on it?
- A. Open-faced diamond
 - B. Diamond with a cross
 - C. Circle
 - D. Square
02498. The light characteristic of flashing is used in the Aids to Navigation System on the Western Rivers for lights on _____.
- A. the right descending bank
 - B. the left descending bank
 - C. preferred channel buoys
 - D. daymarks with no lateral significance
02499. The "head of the bend" is the _____.
- A. top or upstream beginning of a bend
 - B. bottom or downstream beginning of a bend
 - C. midpoint or center radius of a bend
 - D. center line or apex of a bend
02500. When correcting the sextant altitude to apparent altitude you are correcting for inaccuracies in the reading and _____.
- A. for inaccuracies in the reference level
 - B. the equivalent reading at the center of the body
 - C. the equivalent reading from the center of the Earth
 - D. the bending of the rays of light from the body
02502. The major factor that causes the color difference between a red star (Betelgeuse) and a blue star (Rigel) is _____.
- A. its surface temperature
 - B. the elevation above the horizon
 - C. the mass of the star
 - D. the contrast to nearby stars
02504. Under the IALA-A Buoyage System, when entering from seaward a lateral system buoy to be left to starboard may display which topmark in illustration D046NG?
- A. A
 - B. B
 - C. C
 - D. D

02506. Which is TRUE of a downbound vessel when meeting an upbound vessel on the Western Rivers?
- A. She has the right of way only if she is a power-driven vessel.
 - B. She has the right of way only if she has a tow.
 - C. She does not have the right of way, since the other vessel is not crossing the river.
 - D. She must wait for a whistle signal from the upbound vessel.
02508. Normal pool elevation is the height in feet of the section of river above a dam. This height is measured from _____.
- A. low steel on the Huey P. Long Bridge
 - B. mean sea level
 - C. the local water table
 - D. the minimum dam control level
02509. All persons or vessels within the lock area, including the lock approach channels, come under the authority of the _____.
- A. dockmaster
 - B. dock captain
 - C. lockmaster
 - D. lock foreman
02510. When correcting apparent altitude to observed altitude, you do NOT apply a correction for _____.
- A. the equivalent reading to the center of the body
 - B. the equivalent reading from the center of the Earth
 - C. the bending of the rays of light from the body
 - D. inaccuracies in the reference level
02512. In the time diagram in illustration D005NG _____.
- A. you are in east longitude
 - B. your time is about 1000
 - C. your date is a day earlier than the date at Greenwich
 - D. you must be in the northern hemisphere for it to be accurate
02514. Sidereal time is NOT used _____.
- A. as the basis for star charts
 - B. to enter a star finder
 - C. in sight reduction using Pub 249
 - D. in sight reductions of planet observations
02516. Apparent time is based on _____.
- A. a fictitious sun moving along the celestial equator
 - B. the visible sun moving along the ecliptic
 - C. the Moon's motion in relation to the Sun
 - D. the movement of the first point of Aries
02518. In low latitudes, the full Moon will always rise at about _____.
- A. sunrise
 - B. 1200 LMT
 - C. sunset
 - D. 2400 LMT

02519. The standard time meridian for zone description -12 is _____.
A. 165.0° E
B. 172.5° E
C. 180.0°
D. 172.5° W
02520. When correcting the sextant altitude to apparent altitude you are correcting for inaccuracies in the reference level and _____.
A. the equivalent reading to the center of the body
B. the equivalent reading from the center of the Earth
C. for inaccuracies in the instrument
D. the bending of the rays of light from the body
02522. The letter H in illustration D006NG represents the _____.
A. celestial horizon
B. geoidal horizon
C. visible horizon
D. refractive horizon
02524. What is the equivalent of 2°35' in time units?
A. 10 min. 20 sec.
B. 9 min. 10 sec.
C. 7 min. 06 sec.
D. 6 min. 43 sec.
02526. What is the equivalent of 10 min. 52 sec. in arc units?
A. 0°47'
B. 1°12'
C. 2°43'
D. 3°52'
02527. In the doldrums you can expect _____.
A. steady, constant winds
B. frequent rain showers and thunderstorms
C. steep pressure gradients
D. low relative humidity
02528. Illustration D038NG represents a fixed C of E lock and dam. What navigational light(s) is(are) exhibited at the position indicated by the letter A in the illustration?
A. One red light
B. Two red lights
C. Two green lights
D. No light
02529. A bridge over a navigable waterway is being repaired. There is a traveller platform under the bridges deck that significantly reduces the vertical clearance. If required by the CG district commander, how will this be indicated at night?
A. Illumination by flood lights
B. A quick flashing red light at each lower corner
C. A strobe light visible both up and downstream
D. Fixed amber lights under the extreme outer edges of the traveller

02530. The distance between any two meridians measured along a parallel of latitude _____.
- A. increases in north latitude and decreases in south latitude
 - B. decreases as DLO increases
 - C. increases with increased latitude
 - D. decreases with increased latitude
02532. You must construct a Mercator plotting sheet on a piece of paper measuring 28" by 32". The area includes latitude 32° S to 39° S and longitude 005° E to 003° E. Allow a one-half inch neat line on all sides. What is the maximum distance between each degree of longitude that will permit the area of the plotting sheet to be drawn within the stated limitations?
- A. 3.38 inches
 - B. 3.62 inches
 - C. 3.79 inches
 - D. 3.95 inches
02534. You must construct a Mercator plotting sheet on a piece of paper measuring 26" by 30". The area includes latitude 28°15' N to 35°45' N and longitude 174°00' E to 178°00' W. Allow a three-quarter inch neat line on all sides. What is the maximum distance between each degree of longitude that will permit the area of the plotting sheet to be drawn within the stated limitation?
- A. 2.76 inches
 - B. 2.92 inches
 - C. 3.06 inches
 - D. 3.19 inches
02536. A revised print of a chart is made _____.
- A. after every major hydrographic survey of the area covered by the chart
 - B. when there are numerous corrections to be made or the corrections are extensive
 - C. when a low-stock situation occurs and minor corrections are made
 - D. every two years to update the magnetic variation information
02538. The light characteristic of composite group flashing (2 + 1) is used in the Aids to Navigation System on the Western Rivers for lights on _____.
- A. the right descending bank
 - B. the left descending bank
 - C. preferred channel buoys
 - D. daymarks with no lateral significance
02539. Under the IALA cardinal system, a mark with quick white light showing 3 flashes every 10 seconds indicates that the safest water in the area is on the _____.
- A. north side of the mark
 - B. west side of the mark
 - C. east side of the mark
 - D. south side of the mark

02540. The distance between any two meridians measured along a parallel of latitude and expressed in miles is the _____.
- A. difference in longitude
 - B. mid-longitude
 - C. departure
 - D. meridian angle
02542. What magnetic compass corrector(s) CANNOT be set while the vessel is on a heading of magnetic north or magnetic south?
- A. Athwartships magnets
 - B. Heeling magnet
 - C. Flinders bar
 - D. All of the above can be set on magnetic north or magnetic south headings.
02544. At McAlpine L & D, normal upper pool elevation is 420.0 feet MSL, equal to 12.0 feet on the upper gage. The vertical clearance at the Clark Memorial Highway bridge is 72.6 feet above normal pool. What is the clearance if the gage reads 27.2 feet?
- A. 25.4 feet
 - B. 57.4 feet
 - C. 60.6 feet
 - D. 72.6 feet
02546. A structure, usually made of stone or cement pilings which extend from the bank at approximately right angles to the current is called a _____.
- A. dike
 - B. revetment
 - C. cutoff
 - D. crib
02548. On the Mississippi River, gage zero is the gage reading measured from the _____.
- A. National Geodetic Vertical Datum
 - B. low water reference plane
 - C. the lowest recorded river depth
 - D. the highest recorded river depth
02549. Corps of Engineer locks monitor which frequency for initial calls to the locks?
- A. 156.6 MHz (channel 12)
 - B. 156.65 MHz (channel 13)
 - C. 156.7 MHz (channel 14)
 - D. 156.8 MHz (channel 16)
02560. A plane that cuts the Earth's surface at any angle and passes through the center will always form _____.
- A. the equator
 - B. a great circle
 - C. a small circle
 - D. a meridian

02562. In the time diagram in illustration D005NG _____.
- A. the GHA of the Sun is approximately 330°
 - B. your date is one day later than the date at Greenwich
 - C. the LHA of the Sun is approximately 120°
 - D. you are in west longitude
02566. When the time is based on the movement of the visible Sun along the ecliptic the time is known as _____.
- A. real time
 - B. visible time
 - C. apparent time
 - D. mean time
02569. The mean sun used to measure time moves _____.
- A. along the ecliptic at 15° per hour
 - B. along the celestial equator at 15° per day
 - C. along the ecliptic at 15° per day
 - D. along the celestial equator at 15° per hour
02570. A plane that cuts the Earth's surface and passes through the poles will always form _____.
- A. the equator
 - B. a loxodromic curve
 - C. a small circle
 - D. a meridian
02572. The dividing meridian between zone descriptions -4 and -5 is _____.
- A. $60^\circ 00'$ E
 - B. $67^\circ 30'$ E
 - C. $75^\circ 00'$ E
 - D. $60^\circ 00'$ W
02574. What is the equivalent of $2^\circ 52'$ in time units?
- A. 9 min. 23 sec.
 - B. 11 min. 28 sec.
 - C. 11 min. 56 sec.
 - D. 12 min. 18 sec.
02576. What is the equivalent of 8 min. 56 sec. in arc units?
- A. $0^\circ 28'$
 - B. $0^\circ 46'$
 - C. $1^\circ 12'$
 - D. $2^\circ 14'$
02578. You must draw a plotting sheet covering latitudes 49° N to 53° N and longitudes 179° E to 178° W. If the distance between latitude 49° N to 53° N is 16 inches, what is the distance between the meridians of 1° of longitude?
- A. 2.12 inches
 - B. 2.33 inches
 - C. 2.56 inches
 - D. 2.81 inches

02579. A phase correction may be applicable to correct the sextant altitude correction of _____.
- A. any star
 - B. the Sun
 - C. third magnitude stars only
 - D. some planets
02580. The angle at the pole measured through 180° from the prime meridian to the meridian of a point is known as _____.
- A. the departure
 - B. the polar arc
 - C. longitude
 - D. Greenwich hour angle
02582. You must construct a Mercator plotting sheet on a piece of paper measuring 32" by 36". The area includes latitude 31° S to 37° S and longitude 005° W to 002° E. Allow a three-quarter inch neat line on all sides. What is the maximum distance between each degree of longitude that will permit the area of the plotting sheet to be drawn within the stated limitations?
- A. 4.00 inches
 - B. 4.11 inches
 - C. 4.25 inches
 - D. 4.36 inches
02583. You are in the Northern Hemisphere and a tropical wave is located 200 miles due west of your position. Where will the wave be located 24 hours later?
- A. In the same place
 - B. Closer and to the west
 - C. Closer and to the east
 - D. Farther away to the west
02584. You must construct a Mercator plotting sheet on a piece of paper measuring 30" by 36". The area includes latitude $30^\circ 45'$ S to $37^\circ 15'$ S and longitude $004^\circ 00'$ E to $005^\circ 00'$ W. Allow a one inch neat line on all sides. What is the maximum distance between each degree of longitude that will permit the area of the plotting sheet to be drawn within the stated limitation?
- A. 3.09 inches
 - B. 3.22 inches
 - C. 3.41 inches
 - D. 3.58 inches
02586. A chart has extensive corrections to be made to it. When these are made and the chart is again printed, the chart issue is a _____.
- A. first edition
 - B. new edition
 - C. revised edition
 - D. reprint
02587. Given are the courses and speeds of 4 vessels. The navigator of which vessel would be required to know the actual time of meridian transit in order to take an accurate observation at LAN?
- A. C 166° T, Sp 24 knots
 - B. C 013° T, Sp 7 knots
 - C. C 291° T, Sp 25 knots
 - D. C 112° T, Sp 4 knots

02588. You are approaching an open drawbridge and sound the proper signal. You receive no acknowledgment from the bridge. What action should you take?
- A. Approach with caution and proceed through the open draw
 - B. Approach under full control to a position no closer than 400 yards from the bridge and await a signal from the bridge.
 - C. Hold in the channel as a vessel is closing the bridge from the other direction
 - D. Resound the opening signal and do not pass through the bridge until signals have been exchanged
02589. Under the IALA cardinal system, a mark with a quick white light showing 6 flashes followed by one long flash indicates that the safest water is on the _____.
- A. north side of the mark
 - B. west side of the mark
 - C. east side of the mark
 - D. south side of the mark
02590. A plane perpendicular to the polar axis will never form what line on the Earth's surface?
- A. Great circle
 - B. Equator
 - C. Small circle
 - D. Meridian
02592. A deadhead is a(n) _____.
- A. tree or log awash in a nearly vertical position
 - B. crew member who refuses to work
 - C. upstream end of a land wall
 - D. buoy that is adrift
02594. At McAlpine L & D, normal upper pool elevation is 420.0 feet MSL, equal to 12.0 feet on the upper gage. The vertical clearance at the Clark Memorial Highway bridge is 72.6 feet above normal pool. What is the clearance if the gage reads 10.6 feet?
- A. 84.6 feet
 - B. 83.2 feet
 - C. 74.0 feet
 - D. 62.0 feet
02596. The abbreviation L.W.R.P. on the navigation maps means _____.
- A. low water reference plane
 - B. low winter runoff point
 - C. least water river plane
 - D. land wall reference point
02598. A vessel is proceeding downstream in a narrow channel on the Western Rivers when another vessel is sighted moving upstream. Which vessel has the right of way?
- A. The vessel moving upstream against the current.
 - B. The vessel moving downstream with a following current.
 - C. The vessel located more towards the channel centerline.
 - D. The vessel with the least amount of maneuverability.

02600. A parallel of latitude other than the equator is a _____.
A. great circle
B. loxodromic curve
C. small circle
D. gnomonic curve
02602. The lunar day is also known as the _____.
A. lunital interval
B. vulgar establishment of the port
C. nodal day
D. tidal day
02604. A sidereal day is approximately how much shorter than a solar day?
A. 4 minutes
B. 8 minutes
C. 12 minutes
D. 16 minutes
02606. The measurement of local time is based on the passage of the Sun over the _____.
A. upper branch of the observer's meridian
B. lower branch of the observer's meridian
C. upper branch of the Greenwich meridian
D. lower branch of the Greenwich meridian
02609. The letter A in illustration D006NG represents the _____.
A. geoidal horizon
B. celestial horizon
C. visible horizon
D. sensible horizon
02610. A line on the Earth parallel to the equator is a _____.
A. gnomonic curve
B. small circle
C. meridian
D. great circle
02612. The dividing meridian between zone descriptions -7 and -8 is _____.
A. 112°30' E
B. 118°30' E
C. 120°00' E
D. 116°30' W
02614. What is the equivalent of 4°36' in time units?
A. 9 min. 12 sec.
B. 14 min. 36 sec.
C. 15 min. 36 sec.
D. 18 min. 24 sec.

02616. What is the equivalent of 4 min. 04 sec. in arc units?
- A. 60'16"
 - B. 8'08"
 - C. 2'08"
 - D. 1'01"
02618. You must draw a plotting sheet covering latitudes 38° N to 43° N and longitudes 179° E to 178° W. If the distance between each degree of longitude is 5 inches, what is the distance between latitude 38° N and latitude 43° N?
- A. 29.0 inches
 - B. 29.6 inches
 - C. 32.1 inches
 - D. 32.8 inches
02619. In low latitudes, a first quarter Moon will always rise at about _____.
- A. sunrise
 - B. 1200 LMT
 - C. sunset
 - D. 2400 LMT
02620. The navigator is concerned with three systems of coordinates. Which system is not of major concern?
- A. Terrestrial
 - B. Ecliptic
 - C. Celestial horizon
 - D. Celestial equator
02624. You must construct a Mercator plotting sheet on a piece of paper measuring 30" by 32". The area includes latitudes 31°10' S to 37°40' S and longitudes 007°00' W to 001°00' E. Allow a one-half inch neat line on all sides. What is the maximum distance between each degree of longitude that will permit the area of the plotting sheet to be drawn within the stated limitation?
- A. 3.69 inches
 - B. 3.52 inches
 - C. 3.38 inches
 - D. 3.26 inches
02626. What information is found in the chart title?
- A. Date of the first edition
 - B. Date of the edition and, if applicable, the revision
 - C. Information on the sounding datum
 - D. Information on which IALA buoyage system applies
02628. A drawbridge may use visual signals to acknowledge a vessel's request to open the draw. Which of the following signals does NOT indicate that the draw will be opened immediately?
- A. A flashing amber light
 - B. A fixed red light
 - C. A white flag raised and lowered vertically
 - D. A flashing white light

02629. Under the IALA Buoyage Systems, which topmark in illustration D022NG is used on a special mark?
- A. A
 - B. B
 - C. C
 - D. D
02630. In the celestial equator system of coordinates what is NOT equivalent to the longitude of the Earth system of coordinates?
- A. SHA
 - B. t
 - C. LHA
 - D. Zn
02631. The magnitude of three stars is indicated. Which star is the brightest?
- A. Canopus - 0.9
 - B. Vega + 0.1
 - C. Antares + 1.2
 - D. Cannot be determined; magnitude indicates size not brightness
02632. A section of the river that is narrower than usual and is often navigable from bank to bank is a _____.
- A. chute
 - B. stabilized channel
 - C. slough
 - D. navigable pass
02634. Under the U.S. Aids to Navigation System on the Western Rivers, a preferred channel buoy is _____.
- A. horizontally-banded red and green
 - B. vertically-striped red and white
 - C. solid red
 - D. solid green
02636. You are ascending a river and exchanging navigational information via radiotelephone with a descending vessel. If the descending vessel advises you to "watch for the set" above point X, what would you expect to encounter above point X?
- A. An increase in current velocity
 - B. Slack water
 - C. Shallow water
 - D. A sideways movement of your vessel
02638. A vessel crossing a river on the Western Rivers has the right of way over _____.
- A. vessels ascending the river
 - B. vessels descending the river
 - C. all vessels ascending and descending the river
 - D. None of the above

02639. Under the U. S. Aids to Navigation System used on the Western Rivers, aids to navigation lights on the right descending bank show _____.
 A. white or green lights
 B. white or red lights
 C. green lights only
 D. white lights only
02640. In the celestial equator system of coordinates what is the equivalent to the meridians of the Earth system of coordinates?
 A. Horizon
 B. Hour circles
 C. Vertical circles
 D. Parallel of declination
02642. Local sidereal time is equal to the _____.
 A. GHA of Aries minus 180°
 B. SHA of Aries
 C. LHA of Aries
 D. right ascension of Aries plus 180°
02644. The sidereal day begins _____.
 A. when the sun is over the first point of Aries
 B. when the first point of Aries is over 180° longitude
 C. when the first point of Aries is over the upper branch of the reference meridian
 D. at 0000 on 1 January (Sidereal Date)
02646. During daylight savings time the meridian used for determining the time is located farther _____.
 A. east
 B. west
 C. east in west longitude and west in east longitude
 D. west in west longitude and east in east longitude
02648. The 3-cm radar as compared to a 10-cm radar with similar specifications will _____.
 A. give better range performance in rain, hail, etc.
 B. display small targets in a mass of dense sea clutter at a greater range
 C. have less sea return in choppy rough seas
 D. display a more maplike presentation for inshore navigation
02649. The letter C in illustration D006NG represents the _____.
 A. geoidal horizon
 B. celestial horizon
 C. visible horizon
 D. sensible horizon
02650. In the celestial equator system of coordinates what is equivalent to the colatitude of the Earth system of coordinates?
 A. Coaltitude
 B. Zenith distance
 C. Polar distance
 D. Declination

02651. Low pressure disturbances which travel along the intertropical convergence zone are called _____.
- A. tropical waves
 - B. tropical disturbances
 - C. permanent waves
 - D. tidal waves
02652. The dividing meridian between zone descriptions -10 and -11 is _____.
- A. 135°30' E
 - B. 145°00' E
 - C. 150°00' E
 - D. 157°30' E
02654. What is the equivalent of 5°54' in time units?
- A. 20 min. 16 sec.
 - B. 23 min. 36 sec.
 - C. 25 min. 54 sec.
 - D. 30 min. 27 sec.
02656. What is the equivalent of 0 min. 16 sec. in arc units?
- A. 0°32'
 - B. 0°16'
 - C. 0°04'
 - D. 0°01'
02658. You must draw a plotting sheet covering latitudes 45° N to 49° N and longitudes 179° E to 178° W. If the distance between each degree of longitude is 5 3/4 inches, what is the distance between latitude 45° N and latitude 49° N?
- A. 33.1 inches
 - B. 33.3 inches
 - C. 33.6 inches
 - D. 33.9 inches
02660. In the celestial equator system of coordinates what is equivalent to the longitude of the Earth system of coordinates?
- A. Zenith distance
 - B. Azimuth angle
 - C. Declination
 - D. Greenwich hour angle
02662. You must construct a Mercator plotting sheet on a piece of paper measuring 24" by 28". The area includes latitude 37° S to 42° S and longitude 175° E to 179° W. Allow a one inch neat line on all sides. What is the maximum distance between each degree of longitude that will permit the area of the plotting sheet to be drawn within the stated limitations?
- A. 3.33 inches
 - B. 3.41 inches
 - C. 3.67 inches
 - D. 3.82 inches

02664. The Light List shows a lighted aid to navigation on the right bank. This means that the light can be seen on the left side of a vessel _____.
- A. crossing the river
 - B. descending the river
 - C. ascending the river
 - D. proceeding towards sea
02666. The following boats are approaching a lock. Which has priority for locking?
- A. An 85-foot yacht
 - B. Corps of Engineer towboat running empty-headed
 - C. "Delta Queen" (passenger vessel)
 - D. An integrated chemical tow
02668. You are approaching a drawbridge and have sounded the request-for-opening signal. The bridge has responded with five short blasts. What reply should you sound?
- A. None; No reply is required
 - B. Five short blasts
 - C. Two prolonged blasts
 - D. One prolonged, one short blast
02669. Under the IALA Buoyage System, which topmark in illustration D023NG will be displayed on a safe water mark?
- A. A
 - B. B
 - C. C
 - D. D
02670. The angle that is measured westward from the first point of Aries to the hour circle of the body along the celestial equator is the _____.
- A. Greenwich sidereal angle
 - B. local sidereal time
 - C. sidereal hour angle
 - D. azimuth angle
02673. A bluff bar is a bar _____.
- A. extending out from a bluff alongside the river
 - B. that tends to give a false indication of its position
 - C. that has a sharp drop off into deep water
 - D. that is perpendicular to the current
02674. In the U.S. Aid to Navigation System on the Western Rivers, a preferred channel buoy to be left to port while proceeding downstream will _____.
- A. have the upper band red
 - B. show a red or white light if lighted
 - C. have a characteristic of composite group flashing if lighted
 - D. All of the above

02676. The place where a channel moves from along one bank of the river over to the other bank of the river is called a _____.
A. draft
B. cutoff
C. draw
D. crossing
02678. A vessel crossing a river on the Western Rivers, must keep out of the way of a power-driven vessel _____.
A. descending the river with a tow
B. ascending the river with a tow
C. ascending the river without a tow
D. All of the above
02679. Under the U.S. Aids to Navigation System on the Western Rivers, a daymark on the right descending bank will _____.
A. be green
B. have an odd number
C. indicate the gage reading
D. have yellow retroreflective markings
02680. The angle measured eastward from the vernal equinox along the celestial equator often expressed in time units is the _____.
A. Greenwich sidereal time
B. right ascension
C. local sidereal time
D. sidereal hour angle
02682. Sidereal time is used by navigators when _____.
A. used with the equation of time
B. used in the form of LHA Aries
C. calculating the time of moonrise
D. determining local apparent time
02684. The maximum difference between mean time and apparent time is _____.
A. equal to the longitude expressed in time units
B. about 16 minutes
C. the difference between the GHA of mean sun and the first point of Aries
D. 15° of arc
02686. The standard time meridian for description +12 is _____.
A. 172.5° E
B. 180.0°
C. 172.5° W
D. 165.0° W
02688. The 10-cm radar as compared to a 3-cm radar of similar specifications will _____.
A. be more suitable for river and harbor navigation
B. provide better range performance on low lying targets during good weather and calm seas
C. have a wider horizontal beam width
D. have more sea return during rough sea conditions

02689. The letter D in illustration D006NG represents _____.
A. geometrical horizon
B. visible horizon
C. celestial horizon
D. sensible horizon
02690. Right ascension is primarily used by the navigator for _____.
A. calculating amplitudes
B. calculating great circle sailings by the Agiton method
C. entering the Air Navigation Tables (Selected Stars) Pub 249
D. plotting on star finders
02692. The dividing meridian between zone descriptions -2 and -3 is _____.
A. 15°30' E
B. 30°00' E
C. 37°30' E
D. 45°00' E
02694. What is the equivalent of 10°48' in time units?
A. 2 min. 39 sec.
B. 20 min. 12 sec.
C. 43 min. 12 sec.
D. 50 min. 12 sec.
02696. You must draw a plotting sheet covering latitudes 52° S to 56° S and longitudes 179° W to 175° E. If the distance between latitude 52° S to 56° S is 24 inches, what is the distance between the meridians of 1° of longitude?
A. 3.2 inches
B. 3.5 inches
C. 4.0 inches
D. 4.2 inches
02698. You must draw a plotting sheet covering latitudes 38° N to 41° N and longitudes 179° E to 178° W. If the distance between each degree of longitude is 4 inches, what is the distance between latitude 38° N and latitude 41° N?
A. 15.00 inches
B. 15.49 inches
C. 15.75 inches
D. 16.25 inches
02700. In the horizon system of coordinates what is equivalent to the meridian angle of the celestial equator system?
A. Azimuth angle
B. Zenith distance
C. Colatitude
D. Altitude

02702. You must draw a plotting sheet covering latitudes 46° N to 48° N and longitudes 179° E to 178° W. If the distance between each degree of longitude is 2 7/8 inches, what is the distance between latitude 46° N and 48° N?
- A. 8.4 inches
 - B. 8.1 inches
 - C. 7.9 inches
 - D. 7.7 inches
02703. What publication indicates the HYDROLANTS or HYDROPACS issued since the previous working day?
- A. Broadcast Notice to Mariners
 - B. Local Notice to Mariners
 - C. Daily Memorandum
 - D. Summary of Corrections
02704. The Light List shows a lighted aid to navigation on the right bank. This means that the light can be seen on the right side of a vessel _____.
- A. proceeding from seaward
 - B. crossing the river
 - C. ascending the river
 - D. descending the river
02706. The following types of vessels are awaiting lockage on the upper Mississippi. Which type of vessel is normally passed through the lock first?
- A. Pleasure craft
 - B. Commercial towboats
 - C. Commercial passenger vessels
 - D. Commercial fishing vessels
02708. You are approaching a drawbridge and have sounded the proper whistle signal requesting it to open. You hear a signal of one prolonged and one short blast from the bridge. What action should you take?
- A. Anchor or use an alternate route because the bridge is out of service for an extended period of time.
 - B. Approach to a point not closer than 400 yards from the bridge and await further signals.
 - C. Hold in the channel as the bridge will open within 15 minutes.
 - D. Approach under full control to pass through the bridge.
02709. Under the IALA-B Buoyage System, when entering from seaward a lateral system buoy to be left to port may display which topmark in illustration D046NG?
- A. A
 - B. B
 - C. C
 - D. D
02710. In the horizon system of coordinates what is equivalent to the local hour angle of the celestial equator system?
- A. Altitude
 - B. Azimuth
 - C. Zenith distance
 - D. Colongitude

02712. A bold reef is a reef _____.
A. with part of it extending above the water
B. that can be detected by water turbulence
C. that drops off sharply
D. perpendicular to the current
02714. A current moving across a lock entrance toward the river or toward the dam is called a(n) _____.
A. cutoff
B. outdraft
C. lockwash
D. springpool
02716. Under the U.S. Aids to Navigation System on the Western Rivers, passing daymarks on the left descending bank are _____.
A. green squares
B. green diamonds
C. red diamonds
D. red triangles
02718. A power-driven vessel operating in a narrow channel, with a following current, on the Western Rivers, is meeting an upbound vessel. Which statement is TRUE?
A. The downbound vessel has the right-of-way.
B. The downbound vessel must initiate the required maneuvering signals.
C. The downbound vessel must propose the manner and place of passage.
D. All of the above
02719. Under the U.S. Aids to Navigation System on the Western Rivers, passing daymarks on the right descending bank are _____.
A. red diamond-shaped panels with red reflector borders
B. red triangular-shaped panels with red reflector borders
C. green square-shaped panels with green reflector borders
D. green triangular-shaped panels with green reflector borders
02720. When pushing barges ahead close to a steep revetment where there is no current, which of the following is MOST likely to occur?
A. The stern of the towboat will tend to sheer away from the revetment.
B. Your speed over the ground will increase.
C. The head of the tow will tend to sheer away from the revetment.
D. All of the above
02722. The paths of intended travel between three or more points is the _____.
A. course
B. track
C. bearing
D. course over the ground
02724. What condition indicates that your radar needs maintenance?
A. Serrated range rings
B. Indirect echoes
C. Multiple echoes
D. Blind sector

02726. A daymark used as a special mark is indicated by what letter in illustration D045NG?
- A. A
 - B. B
 - C. C
 - D. D
02729. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's fog horn 5.5 seconds after the signal was sounded. What is the distance to the shore?
- A. 1275 yards
 - B. 1150 yards
 - C. 1000 yards
 - D. 825 yards
02730. When attempting an upstream landing while pushing empty barges ahead in a hard onshore wind, the approach is best made _____.
- A. with bow out, stern in
 - B. with bow in, stern out
 - C. parallel to the dock, as close in as possible
 - D. parallel to the dock, as far out as possible
02737. A lateral system buoy displaying a quick light _____.
- A. should be passed close aboard on either side
 - B. indicates that special caution is required
 - C. is used at a channel bifurcation or junction
 - D. is painted with red and white vertical stripes
02738. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's fog horn 3 seconds after the signal was sounded. What is the distance to the shore?
- A. 1100 yards
 - B. 872 yards
 - C. 550 yards
 - D. 792 yards
02739. A daymark used to indicate the starboard side of the channel when approaching from seaward will have the shape indicated by what letter in illustration D045NG?
- A. A
 - B. B
 - C. C
 - D. D
02740. When one upbound vessel is overtaking another vessel and both are pushing a tow ahead, what reaction may you expect?
- A. Both towheads will tend to drift apart, and the overtaking vessel will be slowed down.
 - B. Both towheads will tend to drift together, and the overtaking vessel will be slowed down.
 - C. Both towheads will tend to drift apart, and the overtaken vessel will be slowed down.
 - D. Both towheads will tend to drift together, and the overtaken vessel will be slowed down.

02741. A general chart could have a scale of ____.
- A. 1:200,000
 - B. 1:1,000,000
 - C. 1:50,000
 - D. not more than 1:25,000
02742. A white diamond daymark with an orange border is used ____.
- A. as a special mark
 - B. for information or regulatory purposes
 - C. for a lateral aid on the intra-coastal waterway
 - D. as a safe water mark
02744. The standard atmospheric pressure measured in inches of mercury is ____.
- A. 29.92
 - B. 500.0
 - C. 760.0
 - D. 1013.2
02746. What is used to measure wind velocity?
- A. Psychrometer
 - B. Barometer
 - C. Wind sock
 - D. Anemometer
02748. You are inbound in a channel marked by a range. The range line is 309° T. You are steering 306° T and have the range in sight as indicated in illustration D047NG. The range continues to open. What actions should you take?
- A. Alter course to the right to 309° T or more to bring the range in line
 - B. Continue on course but be ready to come right if the range continues to open
 - C. Alter course to the left until the range is in line then alter course to 309° T
 - D. Come left until the range closes then steer to the left of 306° T
02750. When pushing a tow and approaching barges tied off to the shore, you should ____.
- A. increase speed so you will pass faster
 - B. decrease speed while passing so you won't create a suction
 - C. do nothing different as the barges should be tied off properly
 - D. move to the opposite side of the channel from the barges and increase speed
02752. A daymark used to indicate the safe water in a channel will have the shape indicated by what letter in illustration D045NG?
- A. A
 - B. B
 - C. C
 - D. D

02760. You are pushing a tow ahead, at high speed, near the right hand bank of a canal. The forces affecting your towboat and tow will tend to _____.
- A. push both the head of the tow and the stern of the towboat away from the right hand bank
 - B. push the head of the tow away from, and pull the stern of the towboat into, the right hand bank
 - C. pull both the head of the tow and the stern of the towboat into the right hand bank
 - D. pull the head of the tow into, and push the stern of the towboat away from, the right hand bank
02762. If you take a bearing of 176° to a lighthouse, what other bearing of another prominent object would give the best fix?
- A. 079°
 - B. 151°
 - C. 176°
 - D. 292°
02764. You are in a channel inbound from sea. A daymark used to mark a channel junction when the preferred channel is to port will have the shape indicated by what letter in illustration D045NG?
- A. A
 - B. B
 - C. C
 - D. D
02766. In low latitudes, the high(s) of the diurnal variation of pressure occur(s) at _____.
- A. noon
 - B. noon and midnight
 - C. 1000 and 2200
 - D. 1600
02768. What type of daymark is used to mark the starboard side of the channel when entering from sea?
- A. Red and white octagon
 - B. Black and white diamond
 - C. Red triangle
 - D. Green square
02769. If your vessel must pass through a draw during a scheduled closure period, what signal should you sound to request the opening of the draw?
- A. One prolonged blast followed by one short blast
 - B. Three short blasts
 - C. One prolonged blast followed by three short blasts
 - D. Five short blasts
02770. What is most likely to happen when you push a tow into an eddy?
- A. Going upstream you will make better speed with no danger involved.
 - B. Going downstream you will be slowed down.
 - C. There is a good chance you will break up the tow.
 - D. No danger exists as long as you steer a straight course through the eddy.

02772. The direction in which a vessel should be steered between two points is the _____.
- A. course
 - B. heading
 - C. bearing
 - D. course over the ground
02774. Your radar is set on a true motion display. Which of the following will NOT appear to move across the PPI scope?
- A. Echoes from a buoy
 - B. Own ship's marker
 - C. Echo from a ship on the same course at the same speed
 - D. Echo from a ship on a reciprocal course at the same speed
02776. For a well made and well maintained sextant, the maximum value of what correction is usually so small that it can be ignored?
- A. Personal correction
 - B. Instrument correction
 - C. Phase
 - D. Dip correction
02777. A sailing chart could have a scale of _____.
- A. not more than 1:25,000
 - B. 1:35,000
 - C. 1:100,000
 - D. 1:700,000
02778. A special daymark is a _____.
- A. red-and-white octagon
 - B. daymark with a yellow stripe on it
 - C. green square
 - D. yellow diamond
02779. The buoy indicated by the letter B in illustration D044NG is a _____.
- A. nun
 - B. can
 - C. spar
 - D. pillar
02780. You are pushing a tow ahead and passing close to another towboat which is pushing ahead in the same direction (you are overtaking). After the towheads pass close alongside _____.
- A. you will gain speed
 - B. both boats will gain speed
 - C. the tows will tend to drift apart
 - D. the tows will tend to drift together
02782. Your radar is set on a true motion display. Which of the following will appear to move across the PPI scope.
- A. Own ship's marker
 - B. Echo from a ship at anchor
 - C. Echoes from land masses
 - D. All of the above

02784. Some Loran-C receivers automatically compute and readout the latitude and longitude of a vessel's position. This indicated position may be in error if _____.
- A. the crossing angle of the selected LOP's is less than 48°
 - B. there is signal distortion due to skywave contamination
 - C. the signal travels a significant distance over land
 - D. there is excessive super-refraction due to ducting
02788. The Light List indicates that a dayboard is a type KGW. You should _____.
- A. see a green and white diamond
 - B. leave it to port when southbound on the Atlantic Coast ICW
 - C. pass it close aboard on either side
 - D. look for another daymark to form the range
02789. In fog, when homing on a radiobeacon from a large navigational buoy, you should _____.
- A. alter course as soon as the fog signal is heard
 - B. apply the conversion angle to the received signal's bearing
 - C. disconnect the calibration cam (if so equipped)
 - D. ensure that the bearing moves aft
02790. A towboat has the same draft as the barges it is pushing ahead. If the distance from the stern of the towboat to the head of the tow is 800 feet, where is the approximate location of the pivot point of the unit?
- A. At the head of the tow
 - B. 250 feet from the head of the tow
 - C. 400 feet from the head of the tow
 - D. 600 feet from the head of the tow
02792. If you take a bearing of 142° and 259° to two prominent objects, what bearing of a third object will provide the best fix?
- A. 081°
 - B. 238°
 - C. 201°
 - D. 234°
02794. The standard atmospheric pressure in millibars is _____.
- A. 760.0
 - B. 938.9
 - C. 1000.0
 - D. 1013.2
02796. The correction tables in the Nautical Almanac for use with Moon sights do NOT include the effects of _____.
- A. instrument error
 - B. augmentation
 - C. semidiameter
 - D. parallax
02798. A can buoy is indicated by what letter in illustration D044NG?
- A. A
 - B. B
 - C. C
 - D. D

02799. A sequenced radiobeacon is one that _____.
- A. transmits for one minute at one frequency and then shifts to another frequency for the next minute
 - B. shares the same transmitting frequency with other stations and transmits intermittently
 - C. provides a range and a bearing when used with a calibrated RDF receiver
 - D. must be used in conjunction with a continuous radiobeacon to obtain an LOP
02800. The pivot point of a towboat with a tow ahead is usually which of the following?
- A. One-third the length of the combined unit forward of the towboat
 - B. One-third the length of the combined unit back from the head
 - C. At the head of the towboat
 - D. One-half the length of the combined unit
02801. Mean high water is used _____.
- A. as the reference for soundings on the Gulf coast of the U.S.
 - B. to indicate the shoreline where there is a large tidal fluctuation
 - C. as the reference plane for bottom contour lines
 - D. as the sounding datum for rivers, lakes, etc. regulated by locks
02802. The pictures shown in illustration D011NG represent the geographic location of a vessel and the radar presentation at the same time. Which statement is TRUE?
- A. Ship No. 1 does not paint as an individual target due to the effect of pulse length
 - B. The small island is not detected due to shadow effect of the mountain
 - C. A target bearing of the headland to the south-southeast is corrected by one-half of the beam width
 - D. Ship No. 2 is not detected due to the reflective mass of the mountain overpowering the ship's reflective signals
02803. Some locations maintain a zone time of -13. What are the Greenwich time and date if the zone time and date are 0152, 10 January?
- A. 1252, 9 January
 - B. 1452, 9 January
 - C. 0052, 11 January
 - D. 1452, 11 January
02804. The altitude at LAN may be observed by starting several minutes in advance and continuing until a maximum altitude occurs. This procedure should not be used _____.
- A. when the declination and latitude are of different names
 - B. when the declination is greater than and the same name as the latitude
 - C. if the vessel is stopped or making bare steerageway
 - D. on a fast vessel on northerly or southerly headings

02809. The diurnal variation of pressure is not visible in the middle latitudes in winter because _____.
- A. it is masked by the pressure changes of moving weather systems
 - B. the decreased gravitational effect from the sun causes the variation to fade
 - C. the decreased average temperature is less than the critical temperature
 - D. the increased coriolis force disperses the pressure variation
02810. When steering a tow downstream around the shape of a sand bar, and staying on the proper side of the buoys, an operator should be cautious of _____.
- A. eddies under the bar
 - B. swift current under the bar causing loss of control
 - C. cross-currents pushing the tow away from the bar
 - D. cross-currents pushing the tow into the bar
02812. A line of position from a celestial observation is a segment of a _____.
- A. circle of equal altitude
 - B. parallel of declination
 - C. parallel of altitude
 - D. vertical circle
02814. In low latitudes the range of the diurnal variation of pressure is up to _____.
- A. 0.5 millibar
 - B. 3.0 millibars
 - C. 6.0 millibars
 - D. 10.0 millibars
02816. The length of a wave is the length _____.
- A. of the wave's crest
 - B. of the wave's trough
 - C. measured from crest to trough
 - D. measured from crest to crest
02818. If you take bearings of 313° T and 076° T to two prominent objects, what bearing of a third object will provide the best fix?
- A. 048° T
 - B. 101° T
 - C. 142° T
 - D. 187° T
02819. The time interval between successive wave crests is called _____.
- A. wave period
 - B. wavelength
 - C. frequency
 - D. significant wave height
02820. A towboat is pushing barges ahead at a dangerously fast speed when _____.
- A. the towboat vibrates when backing down
 - B. the roostertail exceeds the height of the main deck
 - C. a strain is placed on the face wires
 - D. water comes over the foredeck of the lead barges

02822. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ships fog horn 2 seconds after the signal was sounded. What is the distance to the shore?
- A. 360 yards
 - B. 320 yards
 - C. 280 yards
 - D. 140 yards
02824. When you turn on the fast time constant (differentiator) control of a radar it will _____.
- A. enhance weak target echoes and brighten them on the PPI
 - B. reduce clutter over the entire PPI by shortening the echoes
 - C. only suppress weak targets to a limited distance from the ship (sea clutter)
 - D. reduce the beam width to provide a map-like presentation for navigation
02826. If you take a bearing of 043° and 169° to two prominent objects, what bearing of a third object will provide the best fix?
- A. 356°
 - B. 102°
 - C. 144°
 - D. 201°
02828. The daily recurring pattern of pressure changes most noticeable in low latitudes is the _____.
- A. daily lapse reading
 - B. diurnal variation of pressure
 - C. pressure tendency
 - D. synoptic pressure
02829. A spar buoy is indicated by what letter in illustration D044NG?
- A. A
 - B. B
 - C. C
 - D. D
02830. The proper way to approach a downstream lock where there is an outdraft is to be _____.
- A. wide out from the land wall, keeping the stern in at all times
 - B. wide out from the land wall, keeping the stern out at all times
 - C. close in to the land wall, keeping the stern in at all times
 - D. close in to the land wall, keeping the stern out at all times
02831. A coastal chart could have a scale of _____.
- A. not more than 1:25,000
 - B. 1:35,000
 - C. 1:100,000
 - D. 1:500,000

02832. The Light List indicates that a dayboard is a type MR. You should _____.
- A. leave it on either side
 - B. look for the other dayboard forming the range
 - C. look for an all red daymark
 - D. check to enter the correct channel at this junction daymark
02834. Mariners should be careful about taking RDF bearings on commercial stations broadcasting entertainment programs. What condition would probably NOT affect such a bearing?
- A. The actual broadcast antenna may be remote from the broadcast station.
 - B. The shorter wave length of the broadcast band tends to re-radiate from the vessel's structure.
 - C. Many of these stations are inland causing land effect when the signal crosses the coastline.
 - D. The operating frequency may differ from the calibrated frequency of the RDF.
02836. The correction tables in the front of the Nautical Almanac for use with Sun sights do NOT include the effects of _____.
- A. mean refraction
 - B. parallax
 - C. semidiameter
 - D. irradiation
02838. If you take a bearing of 191° and 313° to two prominent objects, what bearing of a third object will provide the best fix?
- A. 001°
 - B. 069°
 - C. 209°
 - D. 356°
02839. Privately maintained aids to navigation _____.
- A. are painted white and must use a white light if lighted
 - B. must be conspicuously marked by a signboard with the words "PRIVATE AID"
 - C. must conform to the standards of the U.S. Aids to Navigation System
 - D. are not permitted in or along first-class waterways and may be authorized for second- and third-class waterways
02840. The lockmaster has given you permission to tie off on the lower guide wall to wait your turn to lock through. What should you be most concerned with?
- A. A downbound vessel
 - B. An upbound vessel
 - C. Current reaction when the lock chamber is being emptied
 - D. Current reaction when the lock chamber is being filled
02841. You are required to enter a lock on your voyage. Information on the lock regulations, signals, and radio communications can be found in _____.
- A. the publication "Key to the Locks"
 - B. Bowditch
 - C. Corps of Engineer Information Bulletin
 - D. Coast Pilot

02842. The drawspan of a floating drawbridge may be marked with _____.
A. two white lights
B. a yellow diamond
C. flashing blue lights
D. three red lights on each side of the draw
02844. The signal from a ramark will show on the PPI as a _____.
A. coded signal on the same bearing and at a greater range than the transponder
B. circle surrounding the transponder
C. radial line from the transponder to the center of the PPI
D. dashed circle at the same range as the transponder
02846. What type of daymark is used to mark the port side of the channel when entering from sea?
A. Red and white octagon
B. Black and white diamond
C. Red triangle
D. Green square
02848. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ships fog horn 6 seconds after the signal was sounded. What is the distance to the shore?
A. 1200 yards
B. 1100 yards
C. 1000 yards
D. 900 yards
02849. If you take a bearing of 086° to a lighthouse, what other bearing of another prominent object would give the best fix?
A. 000°
B. 066°
C. 112°
D. 271°
02850. What is used to help prevent damage to barges, locks, and landings when you are locking or landing a tow?
A. Dock cushions
B. Springers
C. Landing bars
D. Bumpers (fenders)
02852. A daymark used as a regulatory or information mark will have the shape indicated by what item in illustration D045NG?
A. A
B. B
C. C
D. D
02854. The distance in miles between the circle of equal altitude for the observed altitude (H_o) and the circle of equal altitude for the completed altitude (H_c) is the _____.
A. equation of time
B. zenith distance
C. intercept
D. zenith angle

02858. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ships fog horn 2 1/2 seconds after the signal was sounded. What is the distance to the shore?
- A. 225 yards
 - B. 460 yards
 - C. 750 yards
 - D. 910 yards
02859. The buoy indicated by the letter C in illustration D044NG is a _____.
- A. nun
 - B. can
 - C. spar
 - D. pillar
02860. On the Mississippi and Ohio Rivers, there is a special type of fog known as steam fog. It is caused by _____.
- A. warm air passing over much colder water
 - B. cold air passing over much warmer water
 - C. a rapid cooling of the ground on a clear night
 - D. rain coming out of a warm air mass aloft
02862. When slanted letters are used to spell the name of a charted object you know the _____.
- A. object is only a hazard to vessels drawing in excess of 20'
 - B. position is approximate or doubtful
 - C. object is always visible
 - D. object may cover and uncover with the tide
02864. You are swinging ship to calibrate the RDF. The RDF gyro bearing is 308° at the same time the visual bearing is 310° pgc. The gyro error is 2° E. At the time of the bearing the heading was 270° pgc. Which statement about the calibration is TRUE?
- A. There is calibration correction on a heading of 272° T.
 - B. The correction is +2° on an RDF bearing of 040° relative.
 - C. The correction is -2° when the vessel is on course 272° T.
 - D. There is no calibration correction on an RDF bearing of 310° T.
02866. Some locations maintain a zone time of -13. What are the zone time and date if the Greenwich time and date are 2152, 10 January?
- A. 1052, 9 January
 - B. 0852, 10 January
 - C. 1052, 10 January
 - D. 1052, 11 January
02868. You are inbound in a channel marked by a range. The range line is 309° T. You are steering 306° T and have the range in sight as indicated in illustration D048NG. What action should you take?
- A. Continue on the present heading until the range is in line then alter course to the right
 - B. Immediately alter course to the right to bring range in line
 - C. Continue on course if the range is closing otherwise alter course to the left.
 - D. Immediately alter course to 309° T if the range is closing

02869. A pillar buoy is indicated by what letter in illustration D044NG?
- A. A
 - B. B
 - C. C
 - D. D
02870. Steam fog is most likely to occur on the Mississippi and Ohio Rivers in _____.
- A. spring, around late evening
 - B. spring, around early evening
 - C. fall, around early morning
 - D. fall, around midday
02872. When using a directional loop antenna to take an RDF bearing, the sense antenna is used to _____.
- A. determine which station of a group of sequenced stations is transmitting
 - B. increase the sensitivity of the receiver
 - C. resolve the 180° ambiguity
 - D. eliminate the induced currents caused by signal re-radiation from the vessel's structure
02874. What daymark has no lateral significance?
- A. Red triangle
 - B. Red and white octagon
 - C. Green and white diamond
 - D. Green square
02875. A harbor chart could have a scale of _____.
- A. not more than 1:25,000
 - B. 1:35,000
 - C. 1:150,000
 - D. not less than 1:500,000
02876. On 13 November 1981 you observe a back sight of the upper limb of the Sun as seen through the sextant's scope. The sextant altitude (hs) is 109°23.6'. The height of eye is 66 feet, and the index error is 2.0' off the arc. What is the observed altitude (Ho)?
- A. 71°01.2'
 - B. 70°57.2'
 - C. 70°45.4
 - D. 70°26.4'
02877. All private aids to navigation in or along navigable waters of the United States are listed in the _____.
- A. Sailing Directions
 - B. Light List
 - C. List of Private Aids
 - D. Aids to Navigation Manual

02878. Given are the courses and speeds of 4 vessels. The navigator of which vessel would be required to know the actual time of meridian transit in order to take an accurate observation at LAN?
- A. C 356° T, Sp 5 knots
 - B. C 099° T, Sp 17 knots
 - C. C 192° T, Sp 23 knots
 - D. C 278° T, Sp 6 knots
02880. While upbound through Memphis, the weather report on the TV news indicates that a cold front will cross western Kentucky and Tennessee the next morning. What weather should accompany this front?
- A. Light, southerly winds; high humidity and possibly fog
 - B. Overcast with steady, light rain or drizzle
 - C. Gusting winds shifting to the northwest with thunderstorms
 - D. Scattered clouds with light to moderate southeasterly winds and possibly fog
02882. While upbound through Memphis, the weather report on TV news indicates that a warm front is stationary over the Kentucky - Missouri - Tennessee areas. What weather conditions should you expect?
- A. Strong, gusting winds from the NW with thundershowers
 - B. Light winds from the northeast with clear skies
 - C. A "blue norther"
 - D. Southerly winds with steady rain; fog or overcast
02884. The pictures shown in illustration D011NG represent the geographic location of a vessel and the radar presentation at the same time. Which statement is TRUE?
- A. Ship No. 1 does not appear as an individual target due to the effect of beam width.
 - B. Small island is not detected due to the multiple echo effect from the mountain.
 - C. A tangent bearing of the headland to the south-southeast is corrected by subtracting one-half of the beam width.
 - D. Ship No. 2 is not detected due to the side lobe effect of radar reflecting from the mountain.
02886. On mid-ocean waters, the height of a wind-generated wave is not affected by the _____.
- A. water depth exceeding 100 feet
 - B. fetch
 - C. wind's velocity
 - D. duration of the wind
02888. You are swinging ship to calibrate the RDF. The RDF gyro bearing is 054° at the same time the visual bearing is 055° pgc. The gyro error is 1° E. At the time of the bearings, the heading was 139° pgc. Which statement about the calibration is TRUE?
- A. One degree must be added to all RDF bearings.
 - B. One degree must be subtracted from a RDF bearing of 055° T.
 - C. One degree must be added to all RDF bearings of 276° relative.
 - D. One degree must be subtracted from RDF bearings when on a course of 140° T.

02889. On 29 June 1981 you observe a back sight of the lower limb of the Moon as seen through the sextant's scope. The sextant altitude (hs) is $114^{\circ}16.9'$. The height of eye is 36 feet, and the index error is $2.0'$ off the arc. The horizontal parallax is $60.5'$. What is the observed altitude (Ho)?
- A. $66^{\circ}23.8'$
 - B. $66^{\circ}04.4'$
 - C. $66^{\circ}00.4'$
 - D. $65^{\circ}53.8'$
02890. While passing through Memphis, the weather report on the TV news indicates that a cold front is crossing western Kentucky and Tennessee. Tomorrow's weather will be dominated by a high pressure area. What weather should you expect tomorrow?
- A. Light, southerly winds; high humidity and possibly fog
 - B. Moderate winds from the northwest, clear visibility and cooler temperatures
 - C. Low overcast; mild temperatures with light, steady rain or drizzle
 - D. Scattered clouds with light, southeasterly winds; high humidity and possibly fog
02891. Twenty-three meters equals _____.
- A. 17.50 feet
 - B. 75.46 feet
 - C. 96.00 feet
 - D. 104.99 feet
02892. The Light List indicates that a dayboard is a type NB. You should _____.
- A. see a black triangle
 - B. look for another daymark forming a range
 - C. expect a daymark of no lateral significance
 - D. check to enter the correct channel at the junction daymark
02894. Fetch is the _____.
- A. distance a wave travels between formation and decay
 - B. stretch of water over which a wave-forming wind blows
 - C. time in seconds required for two crests to pass a given point
 - D. measurement of a wave's steepness
02896. When navigating in pilot waters, the maximum time between bearings used in a running fix should be about _____.
- A. 5 minutes
 - B. 30 minutes
 - C. 1 hour
 - D. 4 hours
02898. The adjustments to your sextant while correcting for the error of collimation are made by turning two screws bearing on the frame. How are these screws turned?
- A. Tighten them both in steps, first one then the other
 - B. Loosen them both in steps, first one then the other
 - C. Tighten one first then loosen the other
 - D. Loosen one first then tighten the other

02899. If you take a bearing of 043° and 169° to two prominent objects, what bearing of a third object will provide the best fix?
- A. 356°
 - B. 073°
 - C. 192°
 - D. 309°
02900. Who should be consulted for changing conditions of controlling depths in major channels?
- A. U.S. Coast Guard
 - B. Defense Mapping Agency
 - C. National Ocean Survey
 - D. U.S. Army Corps of Engineers
02902. The direction a vessel is pointed at any given time is the _____.
- A. course
 - B. track
 - C. heading
 - D. course over the ground
02904. Your radar displays your ship off center. As you proceed on your course, your ship's marker moves on the PPI scope while echoes from land masses remain stationary. What is this display called?
- A. Off center
 - B. True motion
 - C. Stabilized
 - D. Head up
02906. The accuracy of an azimuth circle can be checked by _____.
- A. sighting a terrestrial range in line and comparing the observed bearing against the charted bearing
 - B. aligning the relative bearing markings so that 000° is on the lubber's line and the line of sight passes over the center of the compass
 - C. ensuring that the alignment marks on the inner face of the circle are in line with those on the repeater on relative bearings of 000° and 090°
 - D. comparing differences between the observed azimuth and the computed azimuths of two celestial bodies on two separate azimuths
02908. A daymark used to indicate the port side of the channel when approaching from seaward is indicated by what letter in illustration D045NG?
- A. A
 - B. B
 - C. C
 - D. D
02909. A nun buoy is indicated by what letter in illustration D044NG?
- A. A
 - B. B
 - C. C
 - D. D

02912. Error in RDF bearings may be induced by various conditions. Which of the following would probably NOT affect an RDF bearing?
- A. The great circle radio wave path to the transmitter being parallel to a coastline.
 - B. A skywave contaminating the ground wave.
 - C. The ground wave crossing a land mass between the transmitter and your vessel.
 - D. Sunspot effect on bearings taken around noon.
02913. The Daily Memorandum contains information on _____.
- A. active weather disturbances such as hurricanes or tropical storms
 - B. the latest navigational warnings
 - C. scheduled vessel arrivals and departures for a 24-hour period
 - D. water levels at river ports where run-off affects tidal heights
02914. A daymark with red and green bands and a red band on top will have the shape indicated by what letter in illustration D045NG?
- A. A
 - B. B
 - C. C
 - D. D
02916. If you take a bearing of 191° and 313° to two prominent objects, what bearing of a third object will provide the best fix?
- A. 022°
 - B. 131°
 - C. 211°
 - D. 249°
02918. What agency maintains federal aids to navigation?
- A. Corps of Engineers
 - B. Coast Guard
 - C. National Ocean Service
 - D. Maritime Administration
02919. You are using a radiobeacon for an RDF bearing. It is part of a six-station sequence and just ceased transmitting. How long must you wait before that particular starts transmitting again?
- A. 50 seconds
 - B. 1 minute
 - C. 5 minutes
 - D. 50 minutes
02920. Navigation charts of the Upper Mississippi River are published by _____.
- A. National Ocean Survey
 - B. Lake Survey
 - C. Corps of Engineers, U.S. Army
 - D. U.S. Coast Guard
02922. The Light List indicates that a dayboard is a type TR-SY. You should _____.
- A. look for a dayboard of type TR-TY to form a range
 - B. leave it port when southbound on the Atlantic portions of the ICW
 - C. pass it close aboard on either side
 - D. expect a daymark with no lateral significance

02924. If you take a bearing of 264° to a lighthouse, what other bearing of another object would give the best fix?
- A. 289°
 - B. 350°
 - C. 081°
 - D. 120°
02926. You are inbound in a channel marked by a range. The range line is 309° T. You are steering 306° T and have the range in sight as indicated in illustration D047NG. The range continues to open. What action should you take?
- A. Come left until the range closes then steer to the left of 306° T.
 - B. Alter course to the right to 309° T or more to bring the range in line.
 - C. Continue on course but be prepared to come right if the range continues to open.
 - D. Alter course to the left to close the range, then alter course to 309° T.
02928. You are in a buoyed channel at night and pass a lighted buoy with an irregular characteristic. You should report this to the _____.
- A. Coast Guard
 - B. harbor master
 - C. Corps of Engineers
 - D. National Ocean Service
02929. On 29 June 1981 you observe a back sight of the upper limb of the Moon as seen through the sextant's scope. The sextant altitude (hs) is $114^\circ 16.9'$. The height of eye is 36 feet and the index error is $2.0'$ on the arc. The horizontal parallax is $60.5'$. What is the observed altitude (Ho)?
- A. $66^\circ 31.6'$
 - B. $66^\circ 31.0'$
 - C. $66^\circ 28.8'$
 - D. $66^\circ 26.0'$
02930. How is a navigation light identified on a Army Corps of Engineers navigation map?
- A. Name and light characteristic
 - B. Name and miles A.H.P.
 - C. Light characteristic and miles A.H.P.
 - D. None of the above
02932. The channel under a bridge is marked with lights of the lateral system. The bridge piers adjacent to the channel shall be marked with _____.
- A. occulting white lights
 - B. yellow lights
 - C. fixed white lights
 - D. flashing blue lights
02934. The radar echo from an overhead power line will usually appear on the PPI scope as a _____.
- A. faint echo spanning the channel
 - B. contact located at the low point of sag
 - C. single echo where the line is at a right angle to the bearing to it
 - D. fuzzy or pulsing line caused by the electromagnetic radiation from the power line

02935. On a transpacific voyage, you receive a message from your vessel's operators saying that your vessel has been consigned to voluntary Naval Control of Shipping. Further information is contained in _____.
A. the Light List
B. Radio Aids to Navigation (PUB 117)
C. the International Code of Signals (PUB 102)
D. the Coast Pilot
02936. Information on search and rescue procedures and special, local communications used in Mexican waters will be found in the _____.
A. World Port Index
B. International Code of Signals (Pub 102)
C. Sailing Directions (Planning Guides)
D. Merchant Ship Search and Rescue Manual (MERSAR)
02937. The depth of the water is indicated on a chart as 32 meters. This is equal to _____.
A. 11.50 fathoms
B. 12.62 fathoms
C. 17.50 fathoms
D. 104.99 fathoms
02938. If you take a bearing of 176° to a lighthouse, what other bearing of another prominent object would give the best fix?
A. 000°
B. 021°
C. 189°
D. 272°
02939. The buoy indicated by the letter D in illustration D044NG is a _____.
A. nun
B. can
C. spar
D. pillar
02940. On the Corps of Engineer's Navigation Maps, the channel is _____.
A. midway between the banks
B. indicated by depths (in feet)
C. indicated by a broken line
D. not indicated
02942. Which statement about sequenced radiobeacon operation is TRUE?
A. Each station broadcasts for 6 minutes and is silent for 54 minutes.
B. The distance between stations must be at least 250 miles to prevent confusion of signals.
C. In a six station group, each station broadcasts for one minute and is silent for 5 minutes.
D. Only minor radiobeacons (20 miles or less range) are sequenced.
02944. The height of a wave is the vertical distance _____.
A. from the still water plane to the crest
B. from the still water plane to the trough
C. from crest to trough
D. between water levels at one-quarter of the wave's length

02946. You are inbound in a channel marked by a range. The range line is 309° T. You are steering 306° T and have the range in sight as indicated in illustration DO48NG. The range is closing. What action should you take?
- A. Alter course to the right to 309° T or move to close the range then steer 309° T.
 - B. Continue on 306° T until the range closes then change course to 309° T.
 - C. Steer 306° T until on the range then steer to the left of 306° T to stay on the range.
 - D. Come left until the range closes, then steer to the right of 309° T.
02948. What is used to eliminate the 180° ambiguity when taking an RDF bearing with a rotating loop antenna?
- A. The null
 - B. Sense antenna
 - C. Calibration cam
 - D. Signal strength meter
02949. On 13 November 1981 you observe a back sight of the lower limb of the Sun as seen through the sextant's scope. The sextant altitude (hs) is 109°26.3'. The height of eye is 66 feet, and the index error is 2.0' on the arc. What is the observed altitude (HO)?
- A. 70°56.6'
 - B. 70°38.0'
 - C. 70°27.2'
 - D. 70°23.2'
02950. On a Army Corps of Engineers navigation map, each mile A.H.P. is marked by a _____.
- A. dashed red line
 - B. number showing mileage
 - C. navigation light
 - D. red circle
02952. The channel under a bridge is marked with lights of the lateral system. The centerline of the channel shall be marked on the bridge by _____.
- A. an occulting white light
 - B. a yellow light
 - C. three fixed white lights
 - D. a flashing blue light
02954. You are inbound in a channel marked by a range. The range line is 309° T. You are steering 306° T and have the range in sight as indicated in illustration D047NG. What action should you take?
- A. Continue on the present heading until the range is in line then alter course to the left.
 - B. Immediately alter course to the right to bring the range in line.
 - C. Continue on course if the range is closing, otherwise alter course to the left.
 - D. Immediately alter course to 309° T.

02956. On 23 August 1981 you observe a back sight of the lower limb of the Sun as seen through the sextant's scope. The sextant altitude (hs) is $116^{\circ}42.8'$. The height of eye is 56 feet and the index error is $2.0'$ off the arc. What is the observed altitude (Ho)?
- A. $63^{\circ}42.0'$
 - B. $63^{\circ}38.0'$
 - C. $63^{\circ}19.4'$
 - D. $63^{\circ}06.2'$
02958. Drawbridges equipped with radiotelephones display a _____.
- A. day signal of a yellow diamond marked with the call sign
 - B. white sign with the number 16 and the call sign on it
 - C. black and white diamond marked with RT 16
 - D. blue and white sign showing the radio's channels
02960. Which of the following is NOT found in the Mississippi River System Light List?
- A. Distance that a lighted aid to navigation can be seen at night
 - B. Distance between major points on the Mississippi River
 - C. A color plate showing the details of the aids to navigation used on the Mississippi River
 - D. Times of Coast Guard broadcasts concerning river stages
02962. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's fog horn $4\frac{1}{2}$ seconds after the signal was sounded. What is the distance to the shore?
- A. 405 yards
 - B. 628 yards
 - C. 730 yards
 - D. 825 yards
02964. The pictures shown in illustration D011NG represents the geographic location of a vessel and the radar presentation at the same time. Which statement is TRUE?
- A. Ship No. 1 does not paint as an individual target due to the side lobe affect.
 - B. The small island is not detected due to the limitation caused by the pulse length.
 - C. A tangent bearing of the headland to the south-southeast is corrected by subtracting one-half of the beam width.
 - D. Ship No. 2 is not detected due to the combined affects of beam width and pulse length.
02965. Which symbol represents a 10-fathom curve?
- A. _____
 - B. ... _____
 - C. _____ . _____ . _____
 - D.
02966. If you take a bearing of 264° to a lighthouse, what other bearing of another prominent object would give the best fix?
- A. 291°
 - B. 059°
 - C. 182°
 - D. 239°

02968. Some locations maintain a zone time of -13. What are the zone time and date if the Greenwich time and date are 0152, 10 January?
- A. 0052, 9 January
 - B. 0258, 9 January
 - C. 1452, 10 January
 - D. 0052, 11 January
02969. A red triangular daymark is used to mark _____.
 A. the centerline of a navigable channel
 B. the starboard side (when entering from sea) of a waterway
 C. a prominent object of navigational interest that has no lateral significance
 D. area of a channel where passing another vessel is permitted
02970. The Light List shows a lighted aid to navigation on the left bank. This means that the light can be seen on the left side of a vessel _____.
 A. ascending the river
 B. descending the river
 C. crossing the river
 D. proceeding from seaward
02972. You are in a channel inbound from sea. A daymark used to mark a channel junction when the preferred channel is to starboard will have the shape indicated by what letter in illustration D045NG?
- A. A
 - B. B
 - C. C
 - D. D
02974. What daymark shape is used in the lateral system?
- A. Semicircle
 - B. Triangle
 - C. Pentagon
 - D. Diamond
02976. A large navigational buoy (LNB) is painted _____.
 A. red
 B. yellow
 C. with red and white vertical stripes
 D. with a distinct color and pattern unique to each buoy
02977. Which symbol represents a 2-fathom curve?
- A. -- -- --
 - B. .. ____ .. ____ .. ____
 - C. ____ . ____ . ____ .
 - D.
02978. Where do you find the semidiameter correction to be used to correct sextant observations of the stars?
- A. It is included in the altitude corrections inside the front cover of the Nautical Almanac.
 - B. Table 25 in Bowditch contains the correction.
 - C. A correction of -0.5 should be applied to all star sights.
 - D. No semidiameter correction is used.

02979. If you take a bearing of 356° to a lighthouse, what other bearing of another prominent object would give the best fix?
- A. 013°
 - B. 082°
 - C. 176°
 - D. 201°
02980. What volume of the Coast Guard Light List is used for the Mississippi River system?
- A. I
 - B. II
 - C. IV
 - D. V
02981. The radio navigational warning system that provides information on navigational and meteorological hazards on coastal waters near the broadcasting station is known as _____.
- A. NAVTEX
 - B. HYDROLANT/HYDROPAC
 - C. NAVAREA
 - D. SAFESEA
02982. If you take a bearing of 142° and 259° to two prominent objects, what bearing of a third object will provide the best fix?
- A. 019°
 - B. 084°
 - C. 166°
 - D. 281°
02984. What two shapes indicated in illustration D045NG are used to indicate a preferred channel?
- A. A and B
 - B. B and C
 - C. C and D
 - D. A and D
02986. Some places maintain a zone time of -13. What are the time and date at Greenwich if the zone time and date are 2152, 10 January?
- A. 1052, 9 January
 - B. 0852, 10 January
 - C. 1052, 10 January
 - D. 1052, 11 January
02988. The buoy indicated by the letter A in illustration D044NG is a _____.
- A. nun
 - B. can
 - C. spar
 - D. pillar

02989. On 13 November 1981 you observe a back sight of the upper limb of the Moon as seen through the sextant's scope. The sextant altitude (hs) is $110^{\circ}31.2'$. The height of eye is 46 feet and the index error is $2.0'$ off the arc. The horizontal parallax is $61.3'$. What is the observed altitude (Ho)?
- A. $70^{\circ}41.4$
 - B. $70^{\circ}15.4'$
 - C. $70^{\circ}11.4'$
 - D. $70^{\circ}02.2$
02990. In which of the following sources could you find the vertical clearance of a bridge on the Ohio River?
- A. Notice to Mariners
 - B. Light List of the Mississippi River System
 - C. Great Lakes Pilot
 - D. Coast Pilot of the Gulf of Mexico
02992. The radar echo from an overhead power line will usually appear on the PPI scope as _____.
- A. a contact on a collision course
 - B. a weak echo showing the length of the power line
 - C. a contact located at the low point of sag
 - D. overhead power lines usually do not provide enough signal return to provide an echo
02994. If you take a bearing of 313° and 076° of two prominent objects, what bearing of a third object will provide the best fix?
- A. 014°
 - B. 133°
 - C. 255°
 - D. 339°
02998. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's fog horn 3 1/2 seconds after the signal was sounded. What is the distance to the shore?
- A. 640 yards
 - B. 480 yards
 - C. 315 yards
 - D. 143 yards
02999. When entering a channel from seaward, the numbers on buoys _____.
- A. are the same as the Light List number
 - B. are marked in 6 inch figures with retroreflective material
 - C. increase with the even numbers to starboard
 - D. decrease with the odd numbers to starboard
03000. All aids to navigation listed in the Mississippi River System Light List are shown as miles from a reference point and on the _____.
- A. east or west bank
 - B. left or right descending bank
 - C. port or starboard side of the vessel
 - D. left or right ascending bank

03002. The diurnal variation of pressure is most noticeable _____.
A. above the polar circles
B. in a low pressure area
C. during periods of low temperatures
D. in the doldrums
03004. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's fog horn 4 seconds after the signal was sounded. What is the distance to the shore?
A. 209 yards
B. 363 yards
C. 480 yards
D. 730 yards
03005. The agonic line on an isomagnetic chart indicates the _____.
A. magnetic equator
B. magnetic longitude reference line
C. points where there is no variation
D. points where there is no annual change in variation
03006. You are outbound in a channel marked by a range astern. The range line is 309° T. You are steering 127° T and have the range in sight as indicated in illustration D047NG. What action should you take?
A. Come right to 129° T
B. Continue on course until the range comes in line then alter course to 129° T
C. Continue on course until the range comes in line then alter course to 125° T
D. Come right to close the range then when on the range steer 129° T
03008. If you take a bearing of 086° to a lighthouse, what other bearing of another prominent object would give the best fix?
A. 291°
B. 261°
C. 242°
D. 196°
03009. "Proceeding from seaward" for the purpose of the direction of buoying offshore, lateral system buoys would be proceeding _____.
A. northerly on the Atlantic Coast
B. easterly on the Gulf Coast
C. northerly on the Pacific Coast
D. None of the above
03010. A white buoy with a blue band is _____.
A. an isolated danger mark
B. a hydrographic data collection buoy
C. a mooring buoy
D. marking a restricted area
03011. The survey information upon which a chart is based is found _____.
A. at the top center of the next line
B. near the chart title
C. at the lower left corner
D. at any convenient location

03012. The drawspan of a floating drawbridge may be marked with _____.
A. a yellow light showing Morse (B)
B. a yellow and white diamond
C. flashing blue lights
D. three red lights on each side of the draw
03014. Given are the courses and speeds of 4 vessels. The navigator of which vessel would be required to know the actual time of meridian transit in order to take an accurate observation at LAN?
A. C 356° T, Sp 5.5 knots
B. C 162° T, Sp 27 knots
C. C 095° T, Sp 30 knots
D. C 268° T, Sp 22 knots
03016. The radar control that shortens all echoes on the display and reduces clutter caused by rain or snow is the _____.
A. sensitivity time control (sea clutter control)
B. receiver gain control
C. brilliance control
D. fast time constant (differentiator)
03018. If you take a bearing of 356° to a lighthouse, what other bearing of another prominent object would give the best fix?
A. 013°
B. 178°
C. 256°
D. 342°
03019. Where would you find information about the time of high tide at a specific location on a particular day of the year?
A. Tide Tables
B. Tidal Current Tables
C. Coast Pilot
D. Nautical Almanac
03020. A mooring buoy, if lighted, must show what color light?
A. Yellow
B. White
C. Blue
D. Any color except red or green
03021. What information is found in the chart title?
A. Chart number
B. Chart sounding datum
C. Revision and edition date
D. Variation information
03022. A daymark with red and green bands and a green band on top will have the shape indicated by what letter in illustration D045NG?
A. A
B. B
C. C
D. D

03024. Given are the courses and speeds of 4 vessels. The navigator of which vessel would be required to know the actual time of meridian transit in order to take an accurate observation at LAN ?
- A. C 018° T, Sp 6 knots
 - B. C 079° T, Sp 24 knots
 - C. C 101° T, Sp 7 knots
 - D. C 349° T, Sp 25 knots
03026. A compass card without north-seeking capability that is used for relative bearings is a(n) _____.
- A. bearing circle
 - B. pelorus
 - C. bearing bar
 - D. alidade
03028. The channel under a bridge is marked with aids from the lateral system. The centerline of the channel is marked on the bridge with _____.
- A. a yellow triangle
 - B. three white lights
 - C. a black and white diamond
 - D. a red and white octagon
03029. On 13 November 1981 you observe a back sight of the lower limb of the Moon as seen through the sextant's scope. The sextant altitude (hs) is 110°31.2'. The height of eye is 46 feet and the index error is 2.0' on the arc. The horizontal parallax is 61.3'. What is the observed altitude (Ho)?
- A. 70°11.8'
 - B. 69°41.8'
 - C. 69°25.6'
 - D. 69°18.4'
03030. Isogonic lines are lines on a chart indicating _____.
- A. points of equal variation
 - B. points of zero variation
 - C. the magnetic latitude
 - D. magnetic dip
03032. The path actually followed by a vessel is the _____.
- A. course
 - B. track
 - C. heading
 - D. course over the ground
03034. You are outbound in a channel marked by a range astern. The range line is 309° T. You are steering 127° T and have the range in sight as indicated in illustration D048NG. Assuming there is no set and drift, what action should you take?
- A. Come right to 131° T and check to see if the range closes
 - B. Continue on course until the range comes in line then alter course to 129° T
 - C. Continue on course until the range comes in line then alter to 125° T
 - D. Come left to close the range then when on the range steer 127° T

03035. A major advantage of the NAVTEX system when compared to other systems is that _____.
A. the information can be received on an ordinary FM radio
B. warnings are printed out for reading when convenient
C. broadcasts are at scheduled times
D. a low frequency band is used for long distance transmission
03036. What daymark has no lateral significance?
A. Square; top half green and bottom half red
B. Black and white diamond
C. Red triangle
D. Green square
03038. In low latitudes, the low(s) of the diurnal variation of pressure occur(s) at _____.
A. noon
B. noon and midnight
C. 1000 and 2200
D. 0400 and 1600
03039. As you enter a U.S. channel from seaward the numbers on the buoys _____.
A. increase with the can buoys being even numbered
B. increase with the can buoys being odd numbered
C. decrease with the can buoys being even numbered
D. increase in channels going to the north or west, and decrease in channels going south or east
03040. What type of instrument would be used to help predict the approach of a low pressure system?
A. anemometer
B. fathometer
C. barometer
D. thermometer
03042. How long would a steady wind need to blow in order to create a wind driven current?
A. 2 hours
B. 6 hours
C. 12 hours
D. 18 hours
03052. The Sailing Directions contain information on _____.
A. required navigation lights
B. lifesaving equipment standards
C. casualty reporting procedures
D. currents in various locations
03060. What information is NOT found in the chart title?
A. Survey information
B. Scale
C. Date of first edition
D. Projection

APPENDIX A
ANSWER KEY FOR BOOK 3

00001 B	00056 A	00111 A	00169 A	00228 D
00002 D	00057 B	00112 D	00171 A	00229 A
00003 C	00058 A	00113 C	00172 A	00230 A
00004 B	00059 D	00114 B	00173 B	00231 B
00005 B	00060 A	00115 B	00174 B	00232 D
00006 B	00061 A	00116 C	00175 C	00233 D
00007 C	00062 B	00117 D	00176 C	00235 C
00008 C	00063 D	00118 C	00177 B	00236 C
00009 A	00064 B	00119 C	00178 A	00237 A
00010 A	00065 C	00120 A	00179 C	00238 B
00011 B	00066 A	00121 D	00181 B	00239 D
00012 D	00067 A	00122 A	00182 C	00241 B
00013 B	00068 D	00123 A	00183 C	00243 A
00014 A	00069 A	00124 B	00184 D	00245 D
00016 C	00070 C	00125 B	00185 D	00246 C
00017 A	00071 A	00126 C	00186 C	00247 C
00018 B	00072 B	00127 C	00187 D	00248 D
00019 D	00073 C	00128 A	00189 C	00251 B
00020 A	00074 D	00129 B	00191 C	00252 B
00021 B	00075 B	00130 B	00192 C	00253 D
00022 A	00076 B	00131 D	00193 B	00255 C
00023 A	00077 B	00132 B	00194 A	00256 A
00024 D	00078 B	00133 B	00195 A	00257 D
00025 A	00079 B	00134 B	00196 C	00259 C
00026 D	00080 C	00135 C	00197 A	00260 B
00027 A	00081 C	00136 C	00198 B	00261 D
00028 C	00082 D	00137 D	00199 A	00262 D
00029 C	00083 B	00138 B	00200 A	00263 B
00030 A	00084 A	00139 C	00201 B	00264 B
00031 A	00085 D	00140 C	00202 D	00265 C
00032 B	00086 B	00141 C	00203 B	00266 A
00033 B	00087 A	00142 B	00204 B	00268 D
00034 D	00088 C	00144 B	00205 A	00269 D
00035 D	00089 B	00145 D	00206 C	00271 D
00036 B	00090 B	00147 C	00207 D	00272 B
00037 B	00091 D	00148 B	00208 D	00273 A
00038 D	00092 C	00149 B	00209 A	00274 A
00039 A	00093 A	00150 B	00211 D	00276 B
00040 C	00094 A	00151 B	00212 D	00277 B
00041 B	00095 C	00152 B	00213 C	00278 D
00042 C	00096 A	00153 C	00214 C	00281 B
00043 C	00097 B	00154 D	00215 C	00282 D
00044 A	00098 B	00156 A	00216 B	00283 A
00045 A	00100 B	00157 A	00217 B	00284 B
00046 A	00101 C	00158 C	00218 D	00286 D
00047 C	00102 C	00160 C	00219 D	00287 D
00048 D	00103 B	00161 D	00220 D	00288 C
00049 A	00104 B	00162 C	00221 B	00290 D
00050 B	00105 D	00163 D	00222 D	00291 A
00051 D	00106 D	00164 A	00223 B	00292 C
00052 B	00107 D	00165 D	00224 A	00293 C
00053 B	00108 C	00166 D	00225 A	00294 A
00054 B	00109 C	00167 C	00226 D	00295 B
00055 D	00110 C	00168 C	00227 D	00296 A

APPENDIX A
ANSWER KEY FOR BOOK 3

00297 C	00357 B	00413 A	00471 A	00528 B
00298 A	00358 B	00414 D	00472 B	00529 B
00299 B	00359 D	00415 A	00473 D	00531 C
00300 C	00360 B	00416 B	00474 B	00533 A
00301 D	00361 B	00417 D	00475 B	00534 C
00302 A	00362 D	00418 A	00476 A	00535 D
00303 B	00363 B	00419 B	00477 C	00536 A
00304 B	00364 A	00422 B	00478 D	00537 B
00306 A	00365 A	00423 B	00479 A	00538 A
00307 C	00366 B	00424 D	00480 B	00539 A
00308 B	00367 C	00425 D	00481 A	00541 C
00309 C	00368 A	00426 C	00482 D	00542 B
00310 B	00369 D	00427 C	00483 A	00543 C
00311 B	00370 D	00428 B	00484 A	00544 B
00312 B	00371 C	00429 B	00485 C	00545 A
00313 C	00372 A	00430 D	00486 D	00546 D
00314 D	00373 B	00431 D	00487 D	00547 A
00315 C	00374 A	00432 B	00488 B	00549 D
00316 A	00375 A	00433 A	00489 A	00551 C
00317 C	00376 D	00434 B	00490 B	00552 A
00319 B	00377 B	00435 C	00491 D	00553 C
00320 C	00378 B	00436 C	00492 B	00554 C
00321 B	00379 C	00437 B	00493 C	00555 D
00322 C	00380 B	00438 C	00494 D	00556 A
00323 B	00381 B	00439 A	00495 B	00557 A
00324 C	00382 A	00441 B	00496 D	00558 A
00325 D	00383 D	00442 D	00497 B	00559 D
00326 A	00384 D	00443 D	00498 C	00560 D
00327 B	00385 C	00444 B	00499 D	00561 B
00328 C	00386 B	00445 C	00500 B	00562 A
00329 D	00387 C	00446 B	00501 D	00563 C
00331 D	00388 D	00447 A	00502 A	00564 D
00332 C	00389 A	00448 C	00503 D	00565 A
00333 B	00390 A	00449 A	00504 A	00566 D
00334 D	00391 C	00451 A	00505 D	00567 C
00335 A	00392 B	00452 A	00506 D	00568 A
00336 D	00393 A	00453 B	00507 A	00569 B
00337 B	00394 C	00454 A	00509 D	00571 C
00338 C	00395 A	00455 D	00511 D	00572 B
00339 C	00396 C	00456 D	00512 C	00573 B
00341 C	00397 D	00457 D	00513 B	00574 B
00342 D	00398 B	00458 A	00514 D	00575 D
00343 D	00401 A	00459 D	00515 B	00576 D
00344 B	00402 D	00460 D	00516 D	00577 C
00346 C	00403 C	00461 A	00517 A	00578 B
00347 A	00404 B	00462 A	00518 D	00579 C
00349 C	00405 C	00463 D	00519 B	00580 B
00350 C	00406 D	00464 C	00521 D	00581 D
00351 B	00407 B	00465 B	00522 D	00582 A
00352 D	00408 C	00466 C	00523 B	00583 B
00353 A	00409 A	00467 C	00524 A	00584 A
00354 C	00410 B	00468 B	00525 D	00585 C
00355 C	00411 C	00469 C	00526 B	00586 B
00356 D	00412 A	00470 C	00527 C	00587 B

APPENDIX A
ANSWER KEY FOR BOOK 3

00588 C	00644 A	00702 A	00757 A	00823 D
00589 D	00645 B	00703 D	00758 B	00824 B
00590 C	00646 D	00704 B	00759 B	00825 C
00591 C	00647 C	00705 B	00761 D	00826 A
00592 C	00649 C	00706 C	00762 D	00827 C
00593 B	00650 C	00707 D	00763 D	00828 A
00594 B	00651 B	00708 C	00764 D	00829 D
00595 A	00652 A	00709 B	00765 B	00830 C
00596 D	00653 B	00710 B	00767 B	00831 A
00597 B	00654 D	00711 A	00771 A	00832 B
00598 D	00655 A	00712 D	00772 B	00833 D
00599 B	00656 A	00713 C	00773 A	00834 A
00600 C	00657 B	00714 C	00774 C	00835 A
00601 A	00658 C	00715 A	00775 D	00836 D
00602 B	00659 D	00716 C	00777 A	00837 B
00603 A	00661 D	00717 A	00778 D	00841 B
00604 D	00662 A	00718 A	00779 C	00842 B
00605 C	00663 A	00719 B	00780 C	00843 B
00606 A	00664 B	00720 A	00781 C	00844 D
00607 D	00665 C	00721 B	00782 A	00845 B
00608 B	00666 B	00722 C	00783 B	00846 C
00609 A	00667 B	00723 C	00784 C	00847 B
00610 C	00668 D	00724 D	00785 D	00848 C
00611 C	00670 B	00725 A	00786 C	00849 B
00612 B	00671 C	00726 D	00787 A	00850 C
00613 B	00672 C	00727 C	00789 A	00851 B
00614 B	00673 D	00728 B	00790 A	00852 A
00615 B	00674 B	00729 B	00791 C	00853 A
00616 A	00675 B	00730 C	00792 C	00854 A
00617 A	00676 C	00731 C	00793 D	00855 C
00618 D	00677 A	00732 B	00794 B	00856 B
00619 B	00678 B	00733 D	00795 B	00857 A
00621 B	00679 B	00734 B	00796 B	00858 A
00622 A	00680 D	00735 B	00797 D	00859 D
00623 B	00681 D	00736 C	00798 A	00860 A
00624 A	00682 B	00737 C	00800 A	00861 C
00625 C	00683 C	00739 A	00801 A	00862 A
00626 D	00684 D	00740 A	00802 B	00863 A
00627 C	00685 D	00741 D	00803 C	00864 A
00628 C	00686 B	00742 C	00804 D	00865 A
00629 D	00687 B	00743 C	00805 A	00866 A
00630 A	00688 A	00744 D	00807 C	00867 A
00631 C	00689 A	00745 B	00808 C	00868 B
00632 B	00690 C	00746 C	00809 B	00869 A
00633 A	00691 A	00747 B	00811 A	00871 B
00634 C	00692 C	00748 B	00812 D	00872 A
00636 B	00693 B	00749 B	00813 C	00873 C
00637 D	00694 B	00750 B	00814 A	00874 B
00638 B	00695 A	00751 D	00816 B	00875 D
00639 A	00696 D	00752 D	00817 D	00876 A
00640 A	00697 D	00753 A	00818 D	00877 D
00641 A	00698 A	00754 D	00819 A	00878 C
00642 C	00699 B	00755 D	00821 D	00879 A
00643 C	00701 C	00756 B	00822 C	00881 C

APPENDIX A
ANSWER KEY FOR BOOK 3

00882 B	00939 D✓	01001 A	01056 B	01127 A
00883 C	00941 B✓	01002 A	01057 B	01128 B
00884 D	00942 D	01003 A	01058 C	01129 C
00885 C	00944 B	01004 C	01059 B	01131 B
00886 A	00945 A	01005 B	01060 C	01133 C
00887 A	00946 D	01006 B	01061 B	01134 D
00888 A	00947 B	01007 B	01062 A	01135 A
00889 B	00948 A	01008 C	01063 C	01136 A
00890 C	00950 A	01009 C	01064 D	01137 A
00891 D	00951 C	01010 C	01065 C	01138 D
00892 A	00952 C	01011 D	01066 C	01139 B
00893 B	00953 C	01012 A	01067 B	01140 B
00894 A	00954 D	01013 D	01069 A	01141 C
00895 A	00955 D	01014 B	01071 A	01142 C
00896 C	00956 B	01015 D	01072 C	01143 D
00897 D	00957 A	01016 B	01074 D	01144 B
00898 A	00958 A	01017 C	01075 A	01145 A
00899 C	00959 C	01018 A	01076 A	01146 D
00901 D	00960 B	01019 D	01077 C	01147 C
00902 C	00961 A	01020 C	01081 C	01148 D
00903 B	00962 D	01021 D	01083 C	01150 A
00904 A	00963 C	01022 B	01084 B	01151 D
00905 A	00964 A	01023 A	01086 A	01153 B
00906 A	00965 A	01024 D	01087 D	01154 C
00907 C	00966 B	01025 A	01088 B	01156 A
00908 C	00967 C	01026 B	01089 A	01157 D
00909 C	00970 B	01027 A	01090 A	01158 C
00910 C	00971 C	01028 D	01091 D	01159 D
00911 A	00972 B	01029 D	01093 A	01160 A
00912 B	00973 C	01030 A	01094 B	01161 C
00913 D	00974 A	01031 B	01095 C	01162 C
00914 C	00975 D	01032 C	01096 D	01163 B
00915 D	00976 A	01033 D	01097 A	01164 B
00916 A	00977 A	01034 A	01101 B	01166 D
00917 A	00978 C	01035 D	01102 C	01167 B
00918 B	00979 A	01036 C	01103 A	01168 D
00920 B	00981 A	01037 B	01104 D	01169 A
00921 A	00982 A	01038 B	01105 C	01171 A
00922 C	00983 D	01039 D	01106 B	01172 C
00923 C✓	00984 B	01040 C	01107 D	01173 C
00924 C	00985 B	01041 C	01108 B	01174 D
00925 C	00986 A	01042 D	01109 D	01175 B
00926 B✓	00987 C	01043 C	01111 C	01176 C
00927 B✓	00988 C	01044 C	01113 B	01177 C
00929 C✓	00989 D	01045 B	01114 D	01179 A
00930 A✓	00991 D	01046 C	01116 C	01180 C
00931 C✓	00992 A	01047 D	01117 C	01181 D
00932 B✓	00993 B	01049 B	01120 B	01182 D
00933 A✓	00994 B	01050 C	01121 D	01183 B
00934 D✓	00995 D	01051 D	01122 B	01184 A
00935 B✓	00996 B	01052 A	01123 B	01186 B
00936 C✓	00997 B	01053 D	01124 B	01187 C
00937 D✓	00998 D	01054 D	01125 B	01190 B
00938 D✓	00999 D	01055 D	01126 A	01191 C

APPENDIX A
ANSWER KEY FOR BOOK 3

01192 B	01263 C	01321 D	01382 C	01439 D
01193 C	01264 C	01322 C	01383 A	01440 C
01194 A	01265 A	01323 B	01384 B	01441 C
01196 D	01266 C	01324 A	01385 A	01442 A
01197 B	01267 B	01326 C	01386 D	01443 B
01198 C	01268 D	01327 C	01387 C	01444 C
01199 C	01269 C	01328 A	01388 B	01445 B
01200 D	01270 C	01329 C	01389 C	01446 B
01201 A	01271 D	01330 C	01390 D	01447 B
01202 B	01272 B	01331 A	01391 D	01448 D
01203 D	01273 B	01332 D	01392 A	01449 C
01204 A	01274 B	01333 A	01393 B	01452 B
01205 A	01275 C	01334 D	01394 C	01453 B
01206 B	01276 D	01335 A	01395 A	01454 D
01207 A	01277 A	01336 A	01396 A	01455 A
01208 A	01279 B	01337 A	01397 B	01456 D
01209 D	01280 B	01338 B	01398 A	01457 C
01211 D	01281 C	01339 C	01399 D	01459 C
01212 C	01282 C	01340 B	01400 B	01460 A
01213 A	01283 B	01341 B	01401 B	01461 A
01216 A	01284 A	01342 B	01402 D	01462 D
01217 D	01285 D	01343 D	01403 A	01463 A
01218 A	01286 D	01346 B	01404 D	01464 D
01219 D	01287 B	01347 C	01405 B	01465 A
01221 B	01288 C	01349 C	01406 D	01466 D
01222 D	01289 D	01350 B	01407 A	01467 D
01223 B	01290 C	01351 B	01408 D	01468 D
01226 B	01291 D	01352 B	01409 C	01469 C
01227 C	01292 A	01353 A	01411 C	01470 D
01229 B	01293 C	01354 B	01413 D	01471 A
01231 C	01294 C	01355 D	01414 D	01472 A
01232 A	01295 C	01356 B	01415 C	01473 A
01233 C	01296 D	01357 C	01416 B	01474 A
01234 B	01297 C	01359 B	01417 C	01475 A
01236 B	01298 A	01360 B	01418 B	01476 C
01237 C	01299 D	01361 B	01419 A	01477 C
01238 B	01300 A	01362 C	01421 B	01478 B
01239 A	01301 D	01363 B	01422 D	01479 B
01241 A	01302 A	01364 D	01423 D	01481 A
01242 A	01303 C	01365 A	01424 B	01482 B
01243 D	01304 A	01366 A	01425 B	01483 A
01244 B	01306 D	01367 B	01426 A	01485 C
01246 D	01307 B	01368 C	01427 B	01486 A
01247 A	01308 B	01369 A	01428 D	01487 A
01248 D	01309 B	01370 D	01429 A	01488 C
01249 D	01310 B	01373 A	01430 B	01489 B
01251 C	01311 C	01374 A	01431 C	01490 C
01252 A	01312 A	01375 B	01432 D	01491 D
01253 A	01313 B	01376 D	01433 B	01492 B
01256 A	01314 B	01377 C	01434 C	01493 A
01257 A	01316 D	01378 C	01435 B	01494 C
01260 B	01317 B	01379 B	01436 D	01495 C
01261 B	01318 B	01380 A	01437 B	01496 A
01262 D	01319 A	01381 B	01438 C	01497 B

APPENDIX A
ANSWER KEY FOR BOOK 3

01498 B	01567 C	01678 D	01869 D	01969 D
01499 A	01568 D	01750 D	01870 B	01970 C
01500 D	01569 D	01752 C	01879 C	01972 C
01501 B	01570 C	01754 C	01880 A	01974 C
01502 A	01571 A	01757 D	01882 D	01976 A
01503 B	01573 C	01758 A	01883 B	01978 B
01504 C	01574 C	01759 B	01884 D	01979 B
01505 A	01575 C	01760 D	01885 A	01980 C
01506 B	01576 A	01762 B	01886 C	01982 D
01508 B	01577 D	01766 B	01887 D	01984 D
01509 C	01578 D	01768 C	01888 B	01986 B
01512 C	01579 B	01769 A	01890 C	01987 A
01513 C	01580 D	01770 B	01892 D	01988 A
01514 B	01581 B	01771 C	01898 D	01989 C
01517 B	01582 D	01772 A	01899 D	01990 B
01518 C	01583 B	01774 C	01900 A	01992 B
01519 D	01585 A	01778 A	01902 C	01994 C
01520 A	01586 C	01779 B	01904 B	01996 B
01523 B	01587 B	01782 C	01905 D	01999 C
01525 D	01590 B	01784 C	01906 A	02000 B
01527 B	01591 B	01786 C	01908 D	02002 C
01528 B	01593 B	01789 A	01909 D	02004 D
01530 B	01594 C	01790 A	01910 B	02006 C
01531 B	01595 D	01794 A	01914 B	02008 B
01534 B	01596 A	01800 B	01916 C	02010 A
01535 A	01597 B	01802 B	01918 B	02014 B
01536 A	01599 B	01804 D	01919 D	02016 A
01537 C	01600 A	01806 A	01920 A	02018 C
01538 D	01601 B	01808 A	01922 C	02019 B
01539 C	01604 D	01809 D	01923 B	02020 C
01540 C	01605 A	01812 D	01924 B	02021 D
01541 A	01606 B	01816 D	01926 B	02022 C
01542 C	01608 B	01818 B	01928 D	02024 D
01544 A	01610 A	01820 A	01930 B	02028 C
01545 C	01611 D	01822 A	01932 B	02030 B
01546 B	01612 C	01824 C	01934 D	02032 D
01547 A	01613 B	01826 B	01936 C	02040 A
01548 A	01615 C	01829 D	01938 D	02041 A
01549 D	01616 D	01830 D	01940 C	02042 C
01550 A	01617 A	01832 D	01942 C	02044 B
01551 A	01618 A	01836 D	01944 A	02048 A
01552 B	01619 A	01838 A ✓	01946 B	02049 A
01553 B	01620 D	01840 C ✓	01948 B	02050 C
01555 D	01622 A	01842 D ✓	01949 C	02052 A
01556 C	01631 B	01844 D ✓	01950 B	02054 D
01557 B	01639 C	01848 D ✓	01951 A	02056 B
01559 A	01645 A	01850 B ✓	01952 B	02058 C
01560 A	01646 C	01852 A	01954 B	02059 A
01561 D	01655 B	01858 B	01956 A	02060 C
01562 B	01662 C	01859 C	01958 A	02061 B
01563 D	01668 B	01860 C	01960 C	02062 A
01564 A	01670 C	01862 C	01961 D	02066 C
01565 B	01671 A	01866 A	01964 C	02067 A
01566 A	01672 B	01868 A	01968 B	02068 A

APPENDIX A
ANSWER KEY FOR BOOK 3

02069 B	02199 B	02292 D	02382 B	02470 B
02070 D	02200 A	02294 D	02384 B	02472 D
02072 A	02202 B	02296 A	02386 C	02474 B
02074 A	02203 B	02298 C	02387 D	02476 C
02078 D	02207 C	02299 C	02388 D	02478 A
02079 D	02209 A	02300 A	02389 D	02479 D
02080 B	02210 A	02302 A	02390 A	02480 D
02081 D	02212 D	02304 C	02392 D	02482 B
02082 A	02214 D	02306 A	02394 C	02484 D
02084 A	02215 D	02308 B	02396 A	02486 D
02086 A	02216 B	02309 B	02399 D	02488 B
02087 C	02219 A	02310 D	02400 D	02489 A
02089 B	02220 D	02312 A	02402 A	02490 D
02090 A	02222 B	02314 C	02404 B	02492 C
02092 D	02224 C	02316 D	02406 A	02494 B
02096 D	02226 B	02317 A	02408 D	02496 A
02098 C	02229 A	02318 D	02409 D	02498 A
02100 C	02230 D	02319 A	02410 B	02499 A
02102 B	02232 B	02320 C	02412 B	02500 A
02104 D	02234 D	02322 B	02414 B	02502 A
02110 B	02236 D	02324 A	02416 B	02504 C
02119 A	02238 C	02326 B	02418 B	02506 A
02120 C	02239 A	02328 B	02419 C	02508 B
02124 C	02240 D	02329 D	02420 D	02509 C
02126 C	02242 A	02330 A	02422 B	02510 D
02130 D	02244 B	02332 C	02424 A	02512 A
02131 A	02246 A	02334 C	02426 D	02514 D
02134 B	02248 D	02335 B	02428 A	02516 B
02140 D	02250 C	02336 B	02429 D	02518 C
02144 A	02252 D	02338 C	02430 B	02519 C
02150 C	02254 A	02340 C	02432 A	02520 C
02152 A	02256 C	02342 A	02434 B	02522 C
02158 B	02258 D	02344 D	02436 D	02524 A
02159 B	02259 D	02346 C	02437 C	02526 C
02160 A	02260 B	02348 B	02438 A	02527 B
02161 B	02262 B	02349 A	02439 A	02528 D
02162 C	02264 B	02350 A	02440 C	02529 B
02164 B	02266 D	02352 C	02442 D	02530 D
02168 A	02268 D	02354 D	02444 D	02532 A
02170 C	02269 B	02356 A	02446 B	02534 C
02172 C	02270 B	02358 C	02448 D	02536 C
02174 C	02272 C	02360 D	02449 C	02538 C
02178 C	02274 D	02362 C	02450 A	02539 C
02179 D	02276 A	02364 D	02452 C	02540 C
02180 C	02277 A	02366 B	02454 B	02542 C
02184 A	02278 C	02369 A	02456 C	02544 B
02186 D	02279 A	02370 A	02458 B	02546 A
02188 A	02280 D	02372 C	02459 D	02548 A
02189 D	02282 C	02374 C	02460 D	02549 D
02190 C	02284 D	02375 B	02462 D	02560 B
02191 D	02286 D	02376 D	02464 B	02562 B
02194 C	02288 B	02378 B	02466 C	02566 C
02196 A	02289 B	02379 B	02468 B	02569 D
02198 D	02290 A	02380 D	02469 D	02570 D

APPENDIX A
ANSWER KEY FOR BOOK 3

02572 B	02662 C	02764 D	02850 D	02938 D
02574 B	02664 C	02766 C	02852 B	02939 A
02576 D	02666 B	02768 C	02854 C	02940 C
02578 C	02668 B	02769 D	02858 B	02942 C
02579 D	02669 A	02770 C	02859 D	02944 C
02580 C	02670 C	02772 A	02860 B	02946 C
02582 D	02673 C	02774 A	02862 D	02948 B
02583 D	02674 D	02776 B	02864 B	02949 C
02584 D	02676 D	02777 D	02866 D	02950 D
02586 B	02678 D	02778 D	02868 B	02952 A
02587 A	02679 A	02779 C	02869 C	02954 C
02588 A	02680 B	02780 D	02870 C	02956 D
02589 D	02682 B	02782 A	02872 C	02958 D
02590 D	02684 B	02784 C	02874 C	02960 A
02592 A	02686 B	02788 D	02875 B	02962 D
02594 C	02688 C	02789 D	02876 B	02964 D
02596 A	02689 A	02790 B	02877 B	02965 C
02598 B	02690 D	02792 C	02878 C	02966 C
02600 C	02692 C	02794 D	02880 C	02968 C
02602 D	02694 C	02796 A	02882 D	02969 B
02604 A	02696 B	02798 A	02884 A	02970 B
02606 B	02698 B	02799 B	02886 A	02972 A
02609 D	02700 A	02800 B	02888 C	02974 B
02610 B	02702 A	02801 B	02889 D	02976 A
02612 A	02703 C	02802 B	02890 B	02977 D
02614 D	02704 D	02803 A	02891 B	02978 D
02616 D	02706 C	02804 D	02892 C	02979 B
02618 D	02708 D	02809 A	02894 B	02980 D
02619 B	02709 D	02810 A	02896 B	02981 A
02620 B	02710 B	02812 A	02898 D	02982 A
02624 A	02712 B	02814 B	02899 D	02984 D
02626 C	02714 B	02816 D	02900 D	02986 B
02628 B	02716 D	02818 D	02902 C	02988 B
02629 D	02718 D	02819 A	02904 B	02989 C
02630 D	02719 C	02820 D	02906 D	02990 B
02631 C	02720 C	02822 A	02908 A	02992 A
02632 A	02722 B	02824 B	02909 D	02994 A
02634 A	02724 A	02826 B	02912 D	02998 A
02636 D	02726 B	02828 B	02913 B	02999 C
02638 D	02729 C	02829 B	02914 D	03000 B
02639 A	02730 A	02830 C	02916 D	03002 D
02640 B	02737 B	02831 C	02918 B	03004 D
02642 C	02738 C	02832 A	02919 C	03005 C
02644 C	02739 D	02834 B	02920 C	03006 D
02646 A	02740 C	02836 D	02922 B	03008 D
02648 D	02741 A	02838 B	02924 B	03009 C
02649 B	02742 B	02839 C	02926 A	03010 C
02650 C	02744 A	02840 C	02928 A	03011 B
02651 A	02746 D	02841 D	02929 A	03012 A
02652 D	02748 D	02842 B	02930 B	03014 B
02654 B	02750 B	02844 C	02932 B	03016 D
02656 C	02752 C	02846 D	02934 C	03018 C
02658 C	02760 B	02848 B	02936 C	03019 A
02660 D	02762 A	02849 A	02937 C	03020 B

APPENDIX A
ANSWER KEY FOR BOOK 3

03021 B	03028 D	03034 B	03039 B	03060 C
03022 A	03029 B	03035 B	03040 C	
03024 D	03030 A	03036 B	03042 C	
03026 B	03032 D	03038 D	03052 D	



APPENDIX B
DECK REFERENCE LIBRARY

This is a list of the publications currently in use in the deck reference library of the Merchant Marine Examination Staff at Coast Guard Headquarters. These are the primary references used to develop questions for deck licenses and certificates. Commercial publications may be ordered from the publisher or through local nautical bookstores or distributors. Government publications are available at government bookstores, the U.S. Government Printing Office, Washington D.C., 20402 or through distribution agents for the Defense Mapping Agency and National Ocean Service. Many questions in the data bank were developed from publications that have now been superseded; however, the answers can usually be determined from the current references. While these publications are the ones in use at Coast Guard Headquarters, any authoritative, recognized publication similar to the texts listed can be substituted as a study resource.

GOVERNMENT PUBLICATIONS - DMAHTC

American Practical Navigator - Vols I & II
Handbook of Magnetic Compass Adjustment - Pub. No. 226
International Code of Signals - Pub. No. 102
Nautical Chart Symbols and Abbreviations - Chart No. 1
Radar Navigation Manual - Pub. 1310
Radio Navigational Aids - PUB 117
Sight Reduction Tables Vol. 2 - Pub. No. 229

GOVERNMENT PUBLICATIONS - NATIONAL OCEAN SURVEY

Tide Tables
Tidal Current Tables
United States Coast Pilots

GOVERNMENT PUBLICATIONS - COAST GUARD

Chemical Data Guide for Bulk Shipment by Water (CIM16616.6A)
Light Lists
Navigation and Vessel Inspection Circulars
Navigation Rules (M16672.2B)

GOVERNMENT PUBLICATIONS - MISCELLANEOUS

Language of the Western Rivers Commander Second Coast
Guard District
Marine Fire Prevention, Firefighting, and Fire Safety -
Maritime Administration
Marine Surface Weather Observations (National Weather
Service Observing Handbook No. 1) NOAA
Nautical Almanac - U.S. Naval Observatory
Ship's Medicine Chest and Medical Aid at Sea - Dept. of
Health, Education and Welfare
33 CFR 1-124, Government Printing Office
33 CFR 125-199, Government Printing Office
46 CFR 1-40, Government Printing Office
46 CFR 41-69, Government Printing Office
46 CFR 70-89, Government Printing Office,
46 CFR 90-139, Government Printing Office
46 CFR 140-155, Government Printing Office
46 CFR 156-165, Government Printing Office
46 CFR 166-199, Government Printing Office
49 CFR 100-177, Government Printing Office
49 CFR 178-199, Government Printing Office

APPENDIX B
DECK REFERENCE LIBRARY

REFERENCES PUBLISHED BY
CORNELL MARITIME PRESS
P.O. Box 456
Centerville, MD 21617

American Merchant Seamans Manual - Cornell and Hoffman
Automatic Radar Plotting Aids Manual - Bole and Jones
Behavior and Handling of Ships - Hooyer
Encyclopedia of Nautical Knowledge - McEwen and Lewis
Introduction to Steel Shipbuilding - Baker
Merchant Marine Officer's Handbook - Turpin and MacEwen
Modern Ships - LaDage
Modern Towing - Blank
Nautical Rules of the Road - Farnsworth and Young
Primer of Towing - Reid
Shiphandling for the Mariner - MacElrevey
Shiphandling with Tugs - Reid
Shipmaster's Handbook on Ship's Business - Martin & Aragon
Stability and Trim for the Ship's Officer - LaDage
and Van Gemert
Tanker Operations - Marton
The Business of Shipping - Kendall
Tugs, Towboats and Towing - Brady
Watchstanding Guide for the Merchant Officer - Meurn

REFERENCES DISTRIBUTED BY
SHERIDAN HOUSE
145 Palisade St.
Dobbs Ferry, NY 10522

Basic Shiphandling - Willerton
Business and Law and the Shipmaster - Hopkins
Captain's Guide to Liferaft Survival - Cargal
Merchant Ship Construction - Pursey
Nicholls's Seamanship and Nautical Knowledge - Cockcroft
Notes on Cargo Work - Kemp and Young
Notes on Meteorology - Kemp and Young
Practical Ship-Handling - Armstrong
Radar and Arpa Manual - Dole and Dineley
Seamanship Techniques Volumes 1 and 2 - D. J. House
Seamanship Notes - Kemp and Young
Ship Construction, Sketches and Notes - Kemp and Young
Ship Construction - Eyres
Ship Stability - Derrett
Tanker Handbook for Deck Officers - Baptist
The Oil Rig Moorings Handbook - Vendrell
Thomas' Stowage - Thomas, Agnew and Cole

APPENDIX B
DECK REFERENCE LIBRARY

REFERENCES PUBLISHED BY
THE PETROLEUM EXTENSION SERVICE
UNIVERSITY OF TEXAS AT AUSTIN
BRC-2, 10100 Burnet Road
Austin, TX 78758

A Primer of Offshore Operations
Rotary Drilling Series

Unit I Lesson 10 - Safety on the Rig
Unit V Lesson 1 - Wind Waves and Weather
Unit V Lesson 2 - Spread Mooring Systems
Unit V Lesson 3 - Buoyancy, Stability and Trim
Unit V Lesson 4 - Jacking Systems and Rig Moving
Procedures
Unit V Lesson 6 - Vessel Inspection and Maintenance
Unit V Lesson 7 - Helicopter Safety
Unit V Lesson 8 - Offshore Crane Operations
Unit V Lesson 9 - Life Offshore

REFERENCES PUBLISHED BY
U.S. NAVAL INSTITUTE
2062 Generals Highway
Annapolis, MD 21401

Dutton's Navigation and Piloting - Maloney
Farwell's Rules of the Nautical Road - Bassett and Smith
How to Survive on Land and Sea - Craighead
The Use of Radar at Sea - Wylie
Weather for the Mariner - Kotsch

REFERENCES - OTHER PUBLISHERS

Cargo Handling - Immer Work Saving International,
1638 - 19th St. NW, Washington DC, 20009
Gulf Coast Fishing Vessel Safety Manual - National Council of
Fishing Vessel Safety and Insurance, Texas A&M
University Sea Grant Program
International Maritime Dictionary - VanNostrand, Reinhold
450 W. 33rd St. N.Y., NY 10001
International Safety Guide for Oil Tankers and Terminals -
Witherby and Co., Ltd., 32/36 Aylesbury St.,
London EC1ROET, ENGLAND
Knights Modern Seamanship - VanNostrand, Reinhold,
450 W. 33rd St., New York, NY 10001
Marine Cargo Operations - John Wiley & Sons,
605 Third Ave., NY, NY 10158
Maritime Radio Users Handbook - Radio Technical
Commission for Maritime Services,
Box 1908, Washington DC, 20036
Meteorology - Donn, McGraw Hill
Piloting, Seamanship and Small Boat Handling - Chapman,
Hearst Corp., 959 Eighth Ave., N.Y., NY 10001
The Deckhand's Manual - Inland Waterways Safety Service
Co., New Orleans, LA
This is Sailing - Creagh - Osbourne, Hearst Corp.
959 Eighth Ave., N.Y., NY 10001
United States Code Annotated Title 46, Subtitle II - West
Publishing Co., St. Paul, MN
Vessel Safety Manual - North Pacific Fishing Vessel Owner's
Assoc., RM207, C-3 Bldg., Fisherman's Terminal,
Seattle, WA 98119
Water Survival Manual - Harry Lundeberg School of
Seamanship, Piney Point, MD 20674

APPENDIX B
DECK REFERENCE LIBRARY

REFERENCES PUBLISHED BY
SECRETARY OF THE IMO
PUBLICATIONS SECTION
4 ALBERT EMBANKMENT
LONDON SE1 7SR

Code of Safe Practice for Solid Bulk Cargoes
Merchant Ship Search and Rescue Manual (MERSAR)
Safety Of Life At Sea

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